



DEPARTMENT OF SCIENCE

COURSE OUTLINE – FALL 2011

MA 1200 A2

LINEAR ALGEBRA I

INSTRUCTOR: Brian Redmond,
Ph.D.

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OFFICE HOURS: T R 14:00 – 16:00

PREREQUISITE: Pure Mathematics 30

REQUIRED TEXT/RESOURCE MATERIALS:

Anton & Rorres: Elementary Linear Algebra: Applications Version, 10E, Wiley 2010.

CALENDAR DESCRIPTION:

The course will explore vector and matrix algebra, determinants, linear systems of equations, vector spaces, eigenvalues and eigenvectors and applications.

CREDIT/CONTACT HOURS: 3 (3-1-0) UT

DELIVERY MODE(S):

Lecture: 10:00-11:20 T R J202

Seminar: 9:00-9:50 F J202

COURSE OBJECTIVES:

At the end of this course, students should be able to...

- Solve a system of linear equations by Gauss (-Jordan) elimination and back-substitution;
- Perform basic matrix operations: multiplication, addition/subtraction, transpose, trace, and matrix inversion;
- Calculate the determinant of a matrix by cofactor expansion and row reductions;
- Solve a system of equations using Cramer's rule;
- Calculate the inverse of a matrix using the adjoint method;
- Calculate the norm, distance, dot product, and cross product of vectors in \mathbb{R}^n ;
- Find the angle between vectors and determine orthogonality;
- Translate back and forth between parametric and point-normal equations of lines and planes;
- Prove or disprove that a set of vectors forms a vector space or subspace;
- Determine linear (in)dependence of a set of vectors;
- Find a basis for a vector space and calculate its dimension;
- Find the transition matrix for a change of basis;
- Calculate the rank and nullity of a matrix and find a basis for each of the fundamental matrix spaces;
- Find the standard matrix for a matrix transformation;
- Compute the eigenvalues of a matrix and find corresponding eigenvectors;
- Diagonalize a matrix;
- Apply linear algebra to at least one application to be determined based on students' interest.

TRANSFERABILITY: UA, UC, UL, AU, GMU, etc. Transfers to other institutions: Consult the Alberta Transfer Guide for more information.**

**Note: Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability

GRADING CRITERIA:

GRANDE PRAIRIE REGIONAL COLLEGE			
GRADING CONVERSION CHART			
Alpha Grade	4-point Equivalent	Percentage Guidelines	Designation
A⁺	4.0	90 – 100	EXCELLENT
A	4.0	85 – 89	
A⁻	3.7	80 – 84	FIRST CLASS STANDING
B⁺	3.3	77 – 79	
B	3.0	73 – 76	GOOD
B⁻	2.7	70 – 72	
C⁺	2.3	67 – 69	SATISFACTORY
C	2.0	63 – 66	
C⁻	1.7	60 – 62	
D⁺	1.3	55 – 59	MINIMAL PASS
D	1.0	50 – 54	
F	0.0	0 – 49	FAIL
WF	0.0	0	FAIL, withdrawal after the deadline

EVALUATIONS:

Assignments: 10%

Quizzes: 15%

Midterm: 25% (Thursday, October 27, 2011)

Final Exam: 50% (Cumulative and scheduled during exam period, TBA)

Note: There will be no make-up quizzes or exams. If a quiz/test is missed for a valid reason and proper documentation is provided, then the weight of the quiz/test will be transferred to another component. Late assignments will not be accepted.

STUDENT RESPONSIBILITIES:

Attend all lectures and seminars. If a lecture or seminar is missed, it is the student's responsibility to catch up on the material and obtain the missing lecture notes.

STATEMENT ON PLAGIARISM AND CHEATING: Refer to the Student Conduct section of the College Admission Guide at <http://www.gprc.ab.ca/programs/calendar/> or the College Policy on Student Misconduct: Plagiarism and Cheating at www.gprc.ab.ca/about/administration/policies/**

**Note: all Academic and Administrative policies are available on the same page.

COURSE SCHEDULE/TENTATIVE TIMELINE:

Week	Sections	Notes
1. Sept 5-9	Introduction	First class: Thurs. Sept. 8
2. Sept. 12-16	1.1,1.2	
3. Sept. 19-23	1.3,1.4,1.5	
4. Sept. 26-30	1.6,1.7,1.8	
5. Oct. 3-7	2.1,2.2	
6. Oct. 10-14	2.3	Thanksgiving, Monday, Oct.10 – no classes
7. Oct. 17-21	3.1,3.2,3.3,3.4	
8. Oct. 24-28	3.5	Midterm Thurs. Oct. 27
9. Oct. 31-Nov.4	4.1,4.2	Nov. 2, last day to withdraw
10. Nov. 7-11	4.3	Remembrance Day, Friday, Nov. 11 – no classes
11. Nov. 14-18	4.4,4.5	
12. Nov. 21-25	4.6,4.7	
13. Nov. 28-Dec. 2	4.8,4.9,4.10	
14. Dec. 5-9	5.1,5.2	
15. Dec.12-21		Final Exams