



DEPARTMENT OF SCIENCE
COURSE OUTLINE – WINTER 2012
MA 1200 A3
LINEAR ALGEBRA I

INSTRUCTOR: Tom McLeister **PHONE:** (780) 539-2961

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OFFICE HOURS: T, R 11:30-13:00

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:	08:30 – 09:50	M W	J203
Seminar:	AS1 09:00-09:50	F	J202
	AS2 10:00-10:50	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:

University of Alberta , University of Calgary *, University of Lethbridge *,
Athabasca University *, Augustana Faculty, University of Alberta,
Concordia University College , Canadian University College
Grant MacEwan University, King's University College (From GPRC course catalog)

* An asterisk (*) beside any transfer institution indicates important transfer information. Consult the Alberta Transfer Guide.

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% (Wednesday, Feb. 29, 2012)

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.

SEMINAR ASSIGNMENTS: An assignment will be handed out at the beginning of the seminar, which will be turned in by the end of the seminar for grading.

QUIZZES: Quizzes will be held every Wednesday, beginning January 18.

FINAL EXAM: The final exam will be written during the exam period, between April 16 and April 26 inclusive (including Saturdays and evenings). It is the student's responsibility to be available to write the exam at the scheduled time. Writing early is not permitted.

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

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. Jan. 9-13	1.1, 1.2	First class: Mon, Jan. 9
2. Jan. 16-20	1.3, 1.4, 1.5	
3. Jan. 23-27	1.6, 1.7, 1.8	
4. Jan. 30-Feb.3	2.1, 2.2	
5. Feb.6-10	2.3, 3.1	
6. Feb. 13-17	3.2, 3.3, 3.4	Feb. 20-24, Winter Break
7. Feb. 27-Mar. 2	3.5	Midterm (Wed. Feb. 29)
8. Mar. 5-9	4.1, 4.2	Mar. 6, last day to withdraw
9. Mar. 12-16	4.3, 4.4	
10. Mar. 19-23	4.5, 4.6	
11. Mar. 26-30	4.7, 4.8	
12. Apr. 2-5	4.9, 4.10	Apr. 6, Good Friday-no classes
13. Apr. 9-12	5.1, 5.2	Apr. 12, last day of classes
14, 15. Apr. 16-26		Final Exams