



**DEPARTMENT OF SCIENCE**  
**COURSE OUTLINE – FALL 2021**  
**MA 1200 A2 LINEAR ALGEBRA I – 3(3-0-1) UT**  
**60 HOURS FOR 15 WEEKS**

Grande Prairie Regional College respectfully acknowledges that we are located on Treaty 8 territory, the traditional homeland and gathering place for many diverse Indigenous peoples. We are honoured to be on the ancestral lands of the Cree, Dene/Beaver and Métis, whose histories, languages, and cultures continue to influence our vibrant community. We are grateful to have the opportunity to work, learn, and live on this land.

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

**OFFICE:** J212    **EMAIL:** [tmcleister@gprc.ab.ca](mailto:tmcleister@gprc.ab.ca)

**OFFICE HOURS:** MTWRF 10:00-11:00

**PREREQUISITE:** Mathematics 30-1 or equivalent

**REQUIRED TEXT/RESOURCE MATERIALS:**

W. Keith Nicholson, Linear Algebra with Applications (free pdf available at: [www.lyryx.com](http://www.lyryx.com))

**CALENDAR DESCRIPTION:**

Systems of linear equations, vectors in n-space, vector equations of lines and planes, matrix algebra, inverses and invertibility, introduction to linear transformations, subspaces of n-space, determinants, introduction to eigenvalues and eigenvectors, the dot product and orthogonality, applications in a variety of fields.

**DELIVERY MODE(S):**

Lecture:	A2	TR 13:00 – 14:20	J202
Seminars:	AS1	M 11:30 - 12:20	J226
	AS2	F 08:30 – 09:20	J228

**COURSE OBJECTIVES:** The aim of this course is to present the fundamental ideas and techniques of linear algebra alongside its many applications to the natural and computing sciences.

**LEARNING OUTCOMES:** A successful student will be able to adequately demonstrate an understanding of the concepts stated below (among others):

Chapter 1: Systems of Linear Equations – Solutions and Elementary Operations, Gaussian Elimination, Homogeneous Equations

Chapter 2: Matrix Algebra – Matrix Additions, Scalar Multiplication and Transposition, Equations, Matrices and Transformations, Matrix Multiplication, Inverses, Elementary Matrices, Linear Transformations

Chapter 3: Determinants and Diagonalization – The Cofactor Expansion, Determinants and Matrix Inverses, Diagonalization and Eigenvalues

Chapter 4: Vector Geometry – Vectors and Lines, Projections and Planes, Dot and Cross Product

Chapter 5, 6: Vector Space – Basic Properties, Subspaces and Spanning, Independence and Dimension, Orthogonality, Rank, Similarity and Diagonalization

**TRANSFERABILITY:**

Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at the Alberta Transfer Guide main page

<http://www.transferalberta.ca>.

**\*\* 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**

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**GRADING CRITERIA:**

Alpha Grade	4-point Equivalent	Percentage Guidelines		Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	90-100		C+	2.3	67-69
A	4.0	85-89		C	2.0	63-66
A-	3.7	80-84		C-	1.7	60-62
B+	3.3	77-79		D+	1.3	55-59
B	3.0	73-76		D	1.0	50-54
B-	2.7	70-72		F	0.0	00-49

## **EVALUATIONS:**

Assignments:	15%
Quizzes:	15%
Midterms:	2 × 20% (Tentatively Thur Oct 21, Tue Nov 23)
Final Exam:	30% (Cumulative and scheduled during exam period)

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.

**FINAL EXAM:** The final exam will be written during the exam period, between December 11 and December 20 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:**

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the College Calendar at <http://www.gprc.ab.ca/programs/calendar/> or the College Policy on Student Misconduct: Plagiarism and Cheating at <https://www.gprc.ab.ca/about/administration/policies>

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

## **COURSE SCHEDULE/TENTATIVE TIMELINE: Chapters 1-6**