NORTHWESTERN POLYTECHNIC

DEPARTMENT OF SCIENCE

COURSE OUTLINE – FALL 2023

MA1200 (A2): LINEAR ALGEBRA I – 3 (3-1-0) 60 Hours for 15 Weeks

Northwestern Polytechnic acknowledges that our campuses are located on Treaty 8 territory, the ancestral and present-day home to many diverse First Nations, Metis, and Inuit people. We are grateful to work, live and learn on the traditional territory of Duncan's First Nation, Horse Lake First Nation and Sturgeon Lake Cree Nation, who are the original caretakers of this land.

We acknowledge the history of this land and we are thankful for the opportunity to walk together in friendship, where we will encourage and promote positive change for present and future generations.

INSTRUCTOR:	Tom McLeister	**PHONE:**	(780) 539-2961
OFFICE:	J212	**EMAIL:**	tmcleister@nwpolytech.ca
OFFICE HOURS:	MTWR 13:00-14:00 F 10:00—11:00		

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.

PREREQUISITE: Mathematics 30-1 or equivalent

REQUIRED TEXT/RESOURCE MATERIALS:
W. Keith Nicholson, Linear Algebra with Applications (free pdf available at: www.lyryx.com)

DELIVERY MODE(S):

Lectures:	A2	TR 8:30 – 10:00	J204
Seminars:	AS1	M 11:30 - 12:20	J204
	AS2	F 13:00 – 13:50	J228

LEARNING OUTCOMES: A successful student will be able to:

• Solve systems of linear equations using Gaussian Elimination, Cramer's Rule, and inverse matrices.

• Perform matrix algebra computations, calculate matrix inverses, represent linear transformations by matrices.

• Compute determinants, find eigenvalues and eigenvectors, and diagonalize matrices.

• Find equations of lines and planes, compute dot and cross products.

• Identify subspaces of $\mathbb{R}^n$, find bases of subspaces, determine rank and nullity of a matrix.

• Apply these concepts to solving problems in various settings.

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**

EVALUATIONS:

Worksheets/Assignments:	20%	
Midterms:	$2 \times 20\%$	(Tentatively Thur Oct 19, Thur Nov 23)
Final Exam:	40%	(Cumulative and scheduled during exam period, Dec 14-21 inclusive)

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

GRADING CRITERIA:

Please note that most universities will not accept your course for transfer credit **IF** your grade is **less than C-**.

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

COURSE SCHEDULE/TENTATIVE TIMELINE: We will cover most sections of Chapters 1—5, roughly in order. See "Evaluations" for tentative exam dates.

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 ACADEMIC MISCONDUCT:

Academic Misconduct will not be tolerated. For a more precise definition of academic misconduct and its consequences, refer to the Student Rights and Responsibilities policy available at https://www.nwpolytech.ca/about/administration/policies/index.html.

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

FINAL EXAM: The final exam will be written during the exam period, between December 14 and December 21 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.