NORTHWESTERN POLYTECHNIC

DEPARTMENT OF SCIENCE

COURSE OUTLINE – Fall 2022

MA1000 (A2): Calculus I – 4 (3-2-0) UT 75 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: MTRF 10:00 – 11:00

CALENDAR DESCRIPTION: This course covers coordinates, polar coordinates, analytic geometry, functions, transcendental functions, limits, continuity, derivatives and applications, Taylor expansion, integration and applications.

PREREQUISITE: Math 30-1 and Math 31 or equivalent

REQUIRED TEXT/RESOURCE MATERIALS: We will use a free open source textbook found at www.lyryx.com. You do not need to register. Go to the website and click on "Subjects" >> "Math and Statistics" and go to the bottom of the page. We will use the Open Stax ALLY Calculus texts—mostly Volume 1 but a few sections from Volumes 2 and 3.

DELIVERY MODE(S):

Lectures:	A2	TRF 11:30—12:20 H211
Seminars:	AS1	(Tentatively R 14:30—16:20 Room TBA)

COURSE OBJECTIVES: The aim of this course is to present the fundamental ideas and techniques of calculus alongside its many applications to science and engineering.

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

From Calculus Volume 1 Open Stax

2.1-2.5	Limits, Continuity
3.1-3.9, 6.9	Derivatives of Polynomials, Exponentials, Logarithms, Trigonometric Functions, Inverse Trigonometric Functions, Hyperbolic and Inverse Hyperbolic Functions, The Product, Quotient, and Chain Rules
4.1-4.8, 4.10	Related Rates, Linear Approximation, Differentials, Maxima and minima, Mean Value Theorem, Rolle's Theorem, Increase, Decrease, Graphing, L'Hopital's Rule, Optimization Problems, Antiderivatives
5.1-5.7	Area and Distance, The Definite and Indefinite Integral, The Fundamental Theorem of Calculus, The Substitution Rule
6.1	Area Between Curves

From Calculus Volume 2 Open Stax

6.3, 6.4	Taylor and MacLaurin Series

From Calculus Volume 3 Open Stax

4.3	Partial Derivatives

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	10%	
Quizzes	15%	
Midterm Exam	25%	(Tentatively Wednesday October 26)
Final Exam	50%	(During the Exam Period, Dec 14—22 Inclusive)

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.

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: See Learning Outcomes

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 Northwestern Polytechnic Calendar at https://www.nwpolytech.ca/programs/calendar/ or the Student Rights and Responsibilities policy which can be found 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 22 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.