NORTHWESTERN POLYTECHNIC

DEPARTMENT OF SCIENCE

COURSE OUTLINE – Fall 2024

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: MTWR 13:00 – 14:00 F 10:00--11:00

CALENDAR DESCRIPTION: Review of numbers, inequalities, functions, analytic geometry; limits, continuity; derivatives and applications, Taylor polynomials; log, exp, and inverse trig functions. Integration, fundamental theorem of calculus substitution, trapezoidal and Simpson's rules.

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. 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	MW	10:00—11:20	J204
Seminars:	AS1	F	14:30—16:20	J201
	AS2	M	14:30—16:20	J201

NORTHWESTERN POLYTECHNIC

LEARNING OUTCOMES:

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

- Calculate limits of functions using the limit laws;
- Identify points or intervals where a function is continuous/discontinuous;
- Calculate derivatives of functions using the definitions and the differentiation rules;
- Estimate the value of a function at a point using the tangent line (linear) approximation or differentials;
- Calculate derivatives implicitly and solve related rates problems;
- Sketch the graph of a function and indicate the extreme values, points of inflection, asymptotes, and intervals of concavity;
- Apply calculus to solve optimization problems;
- Calculate definite integrals using Riemann sums and the Fundamental Theorem of Calculus;
- Calculate definite and indefinite integrals using substitution;
- Use the definite integral to compute quantities such as the area between curves, displacement and distance travelled.
- Compute Taylor Polynomials and use them to evaluate the value of a function at a point.

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	20%
Midterm Exams	2×20% (Tentatively Wed Oct 9, Mon Nov 25)
Final Exam	40% (During the Exam Period, Dec 12—19 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.

NORTHWESTERN POLYTECHNIC

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 Vol 1 Ch2-5, §6.1; Vol 2 §§ 6.2,6.3; and (time permitting) Vol 3 §4.3.
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 12 and December 19 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 exams.