

**DEPARTMENT OF SCIENCE
COURSE OUTLINE – Winter 2024**

MA1130 (A3): Elementary Calculus – I (3-2-0) 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: Dr. Selcuk Aygin **PHONE:** (780) 539 2008
OFFICE: J 210 **E-MAIL:** saygin@nwpolytech.ca
OFFICE HOURS: 12.00 – 12.50 Mondays, or by appointment.

CALENDAR DESCRIPTION: The course will include a review of analytic geometry; functions, limits, continuity; differentiation of elementary functions; applications to maxima, minima and rates; introduction to integration; Fundamental Theorem; numerical integration; and areas and other applications of the definite integral to areas.

PREREQUISITE(S)/COREQUISITE: Mathematics 30-1 or equivalent

REQUIRED TEXT/RESOURCE MATERIALS:

- Open textbook freely available through MyCalss.
- Use of calculators is not permitted on the tests or exams.

DELIVERY MODE(S):

Lecture: A3 13.00 – 14.20 M & 11.30 – 12.50 F (Room J228)

Seminar: AS1 14.30 – 16.20 T (Room J228)

Seminar: AS2 14.30 – 16.20 F (Room J228)

LEARNING OUTCOMES:

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

- State the definition of a function and describe the various ways a function can be represented.
- Find the domain and range of a function.

- Identify and sketch standard algebraic, exponential, logarithmic, trigonometric and piecewise defined functions.
- Compose functions.
- Calculate limits of functions using the limit laws.
- Identify points or intervals where a function is continuous/discontinuous.
- Calculate derivatives of functions using the limit definition 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 find the area between curves.

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.transferralberta.alberta.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:

3 Tests: Each equally weighted for a total of 50% (Each approximately worth 16.66%). Tests will take place during Lecture Hours on the dates below.

Test Dates:

January 29, March 4, April 1

12 Seminars: Best 10 marks out of 12, each worth 2% for a total of 20%. This mark will be based on the work submitted during scheduled seminar time.

Final Exam: Worth 30% and will be scheduled by the registrar sometime during the finals period. It is the student's responsibility to be available to write the final exam at the scheduled time. Writing early is not permitted.

Attendance: A bonus of 2% will be given to each student who has more than 70% attendance.

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	95-100	C+	2.3	67-69
A	4.0	85-94	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:

A3	Classes	Test	
Week 1	Jan 8-12		1.1, 1.2, Ch 2
Week 2	Jan 15-19		Ch 2, 3
Week 3	Jan 22-26		Ch 3
Week 4	Jan 29-Feb 2	Jan 29 (T1)	Ch 3
Week 5	Feb 5-9		Ch 4
Week 6	Feb 12-16		Ch 4
Winter Break	Feb 19-23		
Week 7	Feb 26-Mar 1		Ch 5
Week 8	Mar 4 -8	Mar 4 (T2)	Ch 5
Week 9	Mar 11-15		Ch 6
Week 10	Mar 18-22		Ch 6
Week 11	Mar 25-29		Ch 6
Week 12	Apr 1-5	Apr 1 (T3)	Ch 6
Week 13	Apr 8-12		Ch 7
Week 14	Apr 15		Ch 8
Finals	Apr 17-24		

STUDENT RESPONSIBILITIES: Students are responsible for all lecture material, seminars and readings. Students are expected to practice the material by doing problems from the textbook. Tests or seminars cannot be rescheduled. If a test or seminar is missed due to illness or an extreme misfortune the weight will be distributed evenly with the other tests or seminars. A doctor's note and/or an email with supporting documents will be required in all cases. No recording of any kind is allowed in the class, seminar or during consultation with the instructor.

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.