NORTHWESTERN POLYTECHNIC

DEPARTMENT OF SCIENCE

COURSE OUTLINE – Fall 2023

MA1130 (B2): 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:	13.20 – 14.20 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 at www.lyryx.com: Calculus: Early Transcendentals by David Guichard (Click here to go to download page!)

• Use of calculators is not permitted on the tests or exams.

DELIVERY MODE(S):

Lecture: B2 13.00 – 14.20 W F (Room J203)

Seminar: BS1 14.30 – 16.20 R (Room J201)

Seminar: BS2 14.30 – 16.20 T (Room J201)

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.transferalberta.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:**
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> Sep 29, Nov 3, Dec 1

13 Seminars: Best 10 marks out of 13, 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 between December 14 and 21. 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:

B2	Classes	Test	
Week 1	Sept 5-8		1.1, 1.2, Ch 2
Week 2	Sept 11-15		Ch 2, 3
Week 3	Sept 18-22		Ch 3
Week 4	Sept 25-29	Sept 29 (T1)	Ch 3
Week 5	Oct 2-6		Ch 4
Week 6	Oct 10-13		Ch 4
Week 7	Oct 16-20		Ch 5
Week 8	Oct 23-27		Ch 5
Week 9	Oct 30-Nov 3	Nov 3(T2)	Ch 5
Week 10	Nov 6-10		Ch 6
Winter Break	Nov 13-17		
Week 11	Nov 20-24		Ch 6
Week 12	Nov 27-Dec 1	Dec 1 (T3)	Ch 6
Week 13	Dec 4-8		Ch 7
Week 14	Dec 11-12		Ch 8
Final	Dec 14 -21		

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.