NORTHWESTERN POLYTECHNIC

DEPARTMENT SCIENCE

COURSE OUTLINE – Fall 2022

MA1130 (A2): ELEMENTARY CALCULUS I– 3 (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:	**Therar Kadri**	**PHONE:**	(780) 539-3278
OFFICE:	J209	**E-MAIL:**	TKadri@NWPolytech.ca
OFFICE HOURS:	T-R 10:00 AM -11:00 AM & 1:00 PM -2:00 PM		

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 (free) textbook 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:	A2	T R	8:30 – 9:50	Room J226
Seminar:	AS1	W	2:30 – 4:20	Room J226
	AS2	R	2:30 – 4:20	Room J226

COURSE OBJECTIVES:

This course is an introduction to calculus as a basic mathematical tool in solving optimization, rate of change and area problems. The objective of the course is to provide a basic knowledge of calculus and its applications.

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.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 worth 18% for a total of 54%. Tests will take place during Seminar Hours at the dates below.

> **Test Dates:**
> AS1: (W) Oct 5, Nov 2, Nov 30
> AS2: (R) Oct 6, Nov 3, Dec 1

8 Seminars: Each worth 2% for a total of 16%. This mark will be based on the work submitted

during the scheduled seminar time.

Final Exam: Worth 30% and will be scheduled by the registrar sometime between Dec 13 and Dec 22. 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 3% will be given to each student who has more than 65% attendance.

GRADING CRITERIA: (The following criteria may be changed to suite the particular course/instructor)
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:

	Chapters
Week 1 (Sept 1)	**Chapter 1: Review**
Week 2 (Sept 6-8)	**Chapter 2 Functions**
Week 3 (Sept 13-15)	**Chapter 3: Limits**
Week 4 (Sept 20-22)	**Chapter 3: Limits**
Week 5 (Sept 27-29)	**Chapter 4: Derivatives**
Week 6 (Oct 4-6)	**Chapter 4: Derivatives**
Fall Break (Oct 10-14)	
Week 7 (Oct 18-20)	**Chapter 4: Derivatives**
Week 8 (Oct 25-27)	**Chapter 5: Applications of Derivatives**

Week 9 (Nov 1-Nov 3)	**Chapter 5: Applications of Derivatives**
Week 10 (Nov 8-10)	**Chapter 5: Applications of Derivatives**
Week 11 (Nov 15-17)	**Chapter 6: Integration**
Week 12 (Nov 22-24)	**Chapter 6: Integration**
Week 13 (Nov 29- Dec 1)	**Chapter 7: Techniques of Integration**
Week 14 (Dec 6-8)	**Chapter 8: Applications of Integration**
Week 15 (Dec 12)	

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.