DEPARTMENT OF SCIENCE

COURSE OUTLINE – WINTER 2023

MA1010 A3 Calculus II – 3.5 (3-1-0) UT 60 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	**INSTRUCTOR:**	Tom McLeister
OFFICE:	J212	**OFFICE:**	J212
OFFICE HOURS:	MTRF 10:00—11:00		

CALENDAR DESCRIPTION: The course includes applications of integration to lengths, areas, volumes and masses. Transcendental functions. Methods of integration, polar coordinates and parametric equations, vector functions and derivatives are explored.

PREREQUISITE(S)/COREQUISITE: MA1000 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 Volumes 2 and 3.

DELIVERY MODE(S):

Lectures:	A2	TRF 11:30—12:20	H211
Seminars:	AS2	W 10:00—10:50	H211

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 should be able to:

• Calculate integrals by using techniques of integration such as integration by parts, trigonometric integrals, trigonometric substitution and partial fractions.

• Determine whether an improper integral converges or divergent and evaluate improper convergent integrals.

• Use the integral calculus to find the volume and area of a solid of revolution, and the length of a curve.

• Solve separable and linear differential equations.

• Calculate the sum of some elementary numerical series, apply the Integral, Comparison, Ratio, Root, and Alternating Series Tests to decide if a series is convergent or divergent.

• Find the interval of convergence for power series and expand functions as power series by using properties of series and Taylor and MacLaurin series.

• Estimate the sum of a numerical series and find the error of the estimation.

• Approximate functions by Taylor polynomials and find the error of the approximation.

• Solve problems on plane and space parametric curves (sketch of the curve, tangents, curvature.)

• Understand and work with polar coordinates and polar curves (graph, tangents, length and area.)

• Work with cylindrical and spherical coordinates. recognize and graph standard quadrics.

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:

> Assignments: 15%
> Midterms: 2 × 20% (Tentatively Thur Feb 16, Tue Mar 28)
> Final: 45% (Cumulative, during exam period Fri Apr 14—Mon Apr 24)

It is the student's responsibility to be available to write the final exam at the scheduled time. Writing early is not permitted.

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:

Week 1	Jan. 4-7	January 4 – First class
Week 2	Jan. 9-13	January 13—last day to add/drop
Week 3	Jan. 16-20	
Week 4	Jan. 23 -27	
Week 5	Jan. 30- Feb. 3	
Week 6	Feb. 6-10	
Week 7	Feb. 13-17	Thursday February 16 Midterm Exam I (Tentative)
Week 8	Feb. 20-24	Winter Break—No Classes
Week 9	Feb. 27 – Mar. 3	
Week 10	Mar. 6-10	
Week 11	Mar. 13-17	
Week 12	Mar. 20-24	
Week 13	Mar. 27 -31	Tuesday March 28 Midterm Exam II (Tentative)
		Wednesday March 29 Last day to withdraw
Week 14	Apr. 3-7	Fri Apr 7—Good Friday; no classes
Week 15	Apr.10-12	Wednesday April 12 -- last day of classes

Final Exam Period   Friday April 14 – Monday April 24.

STUDENT RESPONSIBILITIES: Students are responsible for all lecture material, labs and readings. Students are expected to practice the material by doing problems from the textbook and/or exercises posted on myClass. Assignments are not accepted if handed in late. If a midterm is missed due to illness the weight will be put on the next midterm or the final. If the final is missed due to illness it will be deferred (see calendar for information). A doctor's note and a phone message or email will be required in both cases.

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.