NORTHWESTERN POLYTECHNIC

DEPARTMENT OF SCIENCE

COURSE OUTLINE – WINTER 2025

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:	T 13:00—14:00	WR 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. 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:	A3	MW 08:30—09:50	H211
Seminars:	AS1	M 11:30—12:20	H211

NORTHWESTERN POLYTECHNIC

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:

Worksheets/Assignments: 15%
Midterms: 2 × 22.5% (Tentatively Wed Feb 12, Wed Mar 26)
Final: 40% (Cumulative, during exam period Mon Apr 14—Wed Apr 23)

GRADING CRITERIA: Please note that most universities will not accept your course for transfer credit **IF** your grade is **less than C-**.

NORTHWESTERN POLYTECHNIC

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. 6-10	January 6 – First class
Week 2	Jan. 13-19	January 15—last day to add/drop
Week 3	Jan. 20-24	
Week 4	Jan. 27 -31	
Week 5	Feb 3-7	
Week 6	Feb. 10-14	Wednesday February 12 Midterm Exam I (Tentative)
Week 7	Feb. 17-21	Family Day and Winter Break—No Classes
Week 8	Feb. 24 – 28	
Week 9	Mar. 3-7	
Week 10	Mar. 10—14	
Week 11	Mar. 17—21	
Week 12	Mar. 24-28	Wednesday March 26 Midterm Exam II (Tentative)
Week 11	Mar. 31-Apr 4	Monday March 31—last day to withdraw
Week 12	Apr. 7-11	Friday April 11—last day of classes.

Final Exam Period Monday April 14—Wednesday April 23

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. 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.

NORTHWESTERN POLYTECHNIC

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 April 14 and April 23 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.