DEPARTMENT SCIENCE

COURSE OUTLINE – Fall 2025

MA2140 (A2): Intermediate Calculus I – 3 (3-1-0) 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:	**Therar Kadri**	**PHONE:**	(780) 539-2878
OFFICE:	J209	**E-MAIL:**	TKadri@NWPolytech.ca
OFFICE HOURS:	T&R 10:00 AM - 12:00 PM		

CALENDAR DESCRIPTION:

The course includes infinite series; plane curves and polar coordinates; vectors and three dimensional analytic geometry; partial derivatives will be explored.

PREREQUISITE(S)/COREQUISITE: Prerequisites: MA1010 or MA1150.

REQUIRED TEXT/RESOURCE MATERIALS:
Calculus: Early Transcendentals, 9" Edition by James Stewart

DELIVERY MODE(S):

Lecture:	**A2**	**T R**	**13:00 – 14:20**	**A213**
Seminar:	**AL1**	**M**	**11:30 – 12:20**	**A213**

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

- Apply the definition of convergence to calculate the limit of a sequence or the sum of a convergent series.
- Apply tests of convergence to determine the behavior of an infinite series.
- Find Taylor series representations of basic functions.
- Find the slope of a line tangent to a parametric curve.
- Graph functions in polar coordinates and find slopes of tangent lines.
- Explain the concepts of limits and continuity for real-valued functions of two or more variables.
- Find derivatives of vector-valued functions and use those derivatives to describe an object's motion.
- Use partial derivatives and/or Lagrange multipliers to locate any extreme values and saddle points of a function of several variables.

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:

Quizzes & Assignments 20% (held as a weekly basis)

Midterms 2 × 20% (Tentatively Week 5: Thu Dec 2, Week 10: Thu Nov 6)

Final Exam 40% (Cumulative and scheduled during exam period, Dec 13-20 inclusive)

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	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:

Weeks	Chapters
Week 1 (Sep 4)	11.1 Sequences 11.2 Series
Week 2 (Sep 9,11)	11.3 Integral test and estimation of sums 11.4 Comparison test
Week 3 (Sep 16,18)	11.5 Alternating series 11.6 Absolute convergence, ratio and root
Week 4 (Sep 23, 25)	11.7 Strategy for testing series 11.8 Power series 11.9 Functions as power series
Week 5 (Oct 2)	11.10 Taylor series 11.11 Applications
Week 6 (Oct 7,9)	12.1 Three-dimensional coordinate system 12.2 Vectors 12.3 Dot product
Week 7 (Oct 14,16)	12.4 Cross product 12.5 Lines and planes 12.6 Quadratics surfaces
Week 8 (Oct 21, 23)	10.1 Parametric curves 10.2 Calculus of parametric curves
Week 9 (Oct 28, 30)	10.3 Polar coordinates 10.4 Areas in polar coordinates
Week 10 (Nov 4,6)	13.1 Space curves 13.2 Derivatives and integrals of vector functions 13.3 Arc length and curvature
(Nov 11,13) Winter Break	
Week 11 (Nov 18,20)	13.4 Velocity and acceleration 14.1 Multivariable functions 14.2 Limits and continuity
Week 12 (Nov 25,27)	14.3 Partial derivatives 14.4 Linear approximation 14.5 The chain rule
Week 13 (Dec 2,4)	14.6 Directional derivative and gradient 14.7 Maximum and minimum
Week 14 (Dec 9)	14.8 Lagrange multiplier

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. 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 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.