

DEPARTMENT of Science

COURSE OUTLINE – Winter 2025

MA2600 A3, AS1: Mathematical Reasoning for Teachers – 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: Brian Redmond
OFFICE: J206
OFFICE HOURS: MW 10:00 AM – 11:30 AM
(or by appointment)

PHONE: 780-539-2982
E-MAIL: bredmond@nwpolytech.ca

CALENDAR DESCRIPTION:

Reasoning and problem solving in the context of logic, algebra, geometry, and combinatorics.

PREREQUISITE:

MA1600 or any 1000 level math course.

RECOMMENDED TEXT/RESOURCE MATERIALS:

- Gary L. Musser, Blake E. Peterson, William F. Burger, Mathematics for Elementary Teachers: A Contemporary Approach, 10th edition, Wiley
- Use of calculators is not permitted on the tests or exams.

DELIVERY MODE(S):

Lectures (A3) Tuesdays and Thursdays 11:30 AM – 12:50 AM in E305
Seminars (AS1) Fridays 10:00 AM – 10:50 AM in E303

LEARNING OUTCOMES:

By the end of the course, students will:

Unit 1: Elementary Logic

- Create, analyze, and critique deductive arguments using symbolic logic.
- Construct and interpret truth tables.
- Use Venn and Euler diagrams to evaluate logical relationships.
- Apply Mathematical Induction to prove statements about natural numbers.

Unit 2: Geometry and Measurement

- Derive and apply formulas to calculate the perimeter, area, and volume of two- and three-dimensional shapes.
- Classify and measure angles in various geometrical contexts.
- Determine the circumference and area of circles.
- Solve mathematical problems using principles of congruence, similarity, and the Pythagorean theorem.
- Understand and apply concepts of circle geometry.
- Use a coordinate system to solve geometric problems.

Unit 3: Counting and Probability

- Solve counting problems using the fundamental counting principle, tree diagrams, factorials, permutations, combinations, and Pascal's triangle.
- Calculate probabilities for both simple and complex experiments.
- Compute the expected value of a random variable.
- Apply the linearity of expected value in problem-solving contexts.

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:

Worksheets	24%
Unit Tests (x3)	3x14%=42%
Final	32%
Attendance:	2% will be given to each student who has more than 75% 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:

Lecture/Seminar	Date	Topic	Assessment
L1	Tues. Jan. 7	Elementary Logic	
L2	Thurs. Jan. 9		
S1	Fri. Jan. 10		Worksheet 1
L3	Tues. Jan. 14		
L4	Thurs. Jan. 16		
S2	Fri. Jan. 17		Worksheet 2
L5	Tues. Jan. 21	Mathematical Induction	
L6	Thurs. Jan. 23		

S3	Fri. Jan. 24		Worksheet 3
L7	Tues. Jan. 28	Geometry and Measurement	
L8	Thurs. Jan. 30		
S4	Fri. Jan. 31		Worksheet 4
L9	Tues. Feb. 4		Unit Test 1
L10	Thurs. Feb. 6	Geometry and Measurement	
S5	Fri. Feb. 7		Worksheet 5
L11	Tues. Feb. 11		
L12	Thurs. Feb. 13		
S6	Fri. Feb. 14		Worksheet 6
	Tues. Feb. 18		Winter Break – no classes
	Thurs. Feb. 20		
	Fri. Feb. 21		
L13	Tues. Feb. 25	Geometry and Measurement	
L14	Thurs. Feb. 27		
S7	Fri. Feb. 28		Worksheet 7
L15	Tues. Mar. 4		
L16	Thurs. Mar. 6		
S8	Fri. Mar. 7		Worksheet 8
L17	Tues. Mar. 11		
L18	Thurs. Mar. 13	Probability	
S9	Fri. Mar. 14		Worksheet 9 (Pi Day!!!)
L19	Tues. Mar. 18		Unit Test 2
L20	Thurs. Mar. 20	Probability	
S10	Fri. Mar. 21		Worksheet 10
L20	Tues. Mar. 25		

L21	Thurs. Mar. 27		
S11	Fri. Mar. 28		Worksheet 11
L22	Tues. Apr. 1		
L23	Thurs. Apr. 3		
FS12	Fri. Apr. 4		Worksheet 12
L24	Tues. Apr. 8	Unit 3 Test	
L25	Thurs. Apr. 10	Review	
S13	Fri. Apr. 11		

Final exam period: Monday, April 14 – Wednesday, April 23, inclusive.

STUDENT RESPONSIBILITIES:

This is a challenging course. Success requires regular attendance, timely completion of assignments, and at least 10 hours of weekly study outside of class. Collaboration with classmates is encouraged, but each student must submit their own work and ensure they understand it fully.

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.