

## DEPARTMENT of ACADEMIC UPGRADING

### COURSE OUTLINE – Fall 2024

**MA0132 (A2): Mathematics Grade 12 Equivalent (Principles 30-2)– 5 (6-0-0) HS**  
**90 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.

<b>INSTRUCTOR:</b>	DORIS LACHANCE	<b>PHONE:</b>	(780)539-2234
<b>OFFICE:</b>	TBD	<b>E-MAIL:</b>	dlachance@nwpolytech.ca
<b>OFFICE HOURS:</b>	TBD or by appointment		

#### CALENDAR DESCRIPTION:

This course explores set theory, counting methods, probability, rational expressions and equations, and functions (polynomial, exponential, logarithmic, and sinusoidal).

#### PREREQUISITE(S):

Complete 1 of the following:

- MA0120-Mathematics Grade 20-1 Equivalent (5)
- Equivalent course, or equivalent placement test score, or Math 20-1 or 60% or better in Math 20-2 within the previous two years.

Complete the following:

- MA0122 – Mathematics Grade 20-2 Equivalent (5)

#### REQUIRED TEXT/RESOURCE MATERIALS:

iWrite Foundations of Mathematics 12 Workbook

Non-graphing scientific calculator (TI-30XIIS recommended)

Internet access for MyClass and additional material

- On-campus (attend on-campus, in-person) – This type of course will be delivered on campus in a specific location which will be indicated on the student timetable. Students are expected to fully attend in person.
- This is a lecture based course.

## LEARNING OUTCOMES:

### Unit 1: Logical Reasoning and Set Theory

- Analyze puzzles and games that involve numerical and logical reasoning, using problem-solving strategies
- Use set notation and operations
- Represent relationships between sets using Venn diagrams
- Solve problems that involve the application of set theory

### Unit 2: Counting Methods

- Determine the number of permutations and combinations of a given collection of objects
- Use the fundamental counting principle
- Solve problems that involve factorials, permutations and combinations

### Unit 3: Probability

- Interpret and assess the validity of odds and probability statements
- Solve problems that involve the probability of mutually exclusive and non-mutually exclusive events
- Solve problems that involve the probability of dependent and independent events

### Unit 4: Rational Expressions and Equations

- Determine equivalent forms of rational expressions
- Simplify rational expressions
- Determine non-permissible values and the domain of a rational function
- Perform operations with rational expressions (add, subtract, multiply and divide)
- Solve problems that involve rational equations



## Unit 5: Exponential and Logarithmic Functions

- Demonstrate an understanding of logarithms and the laws of logarithms
- Solve problems that involve exponential equations
- Solve problems modeled with exponential and logarithmic functions
- Solve problems in financial mathematics using logarithms and exponentials

## Unit 6: Polynomials

- Identify the characteristics of polynomial functions
- Identify intercepts, and the end behavior of polynomial functions
- Use polynomial functions of degree  $\leq 3$  to model data (e.g. regression)

## Unit 7: Sinusoidal Functions

- Sketch angles in degree and radian measure
- Graph and analyze sinusoidal functions, including intercepts, amplitude, periods, phase shifts, midline value, and maximum and minimum values
- Model data with sinusoidal functions

More information available at: <https://www.alberta.ca/assets/documents/edc-math30-2-assessment-standards-exemplars.pdf>

### 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:

Homework	8%
Unit Tests	32%
Midterm	25%
Final Exam (cumulative)	35%

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:

Assignment 1 (Set Theory): Sept. 12

Assignment 2 (Probability): Sept. 30

Assignment 3 (Exponential Functions): Nov. 4

Assignment 4 (Polynomial Functions): Nov. 28

Test 1 (Units 1&2): Sept 21

Test 2 (Units 3&4): Oct. 19

Midterm: Oct. 25

Test 3 (Unit 5): Nov. 16

Test 4 (Units 6&7): Dec. 6

Final Exam: TBD (Dec. 10-20)

## STUDENT RESPONSIBILITIES:

In addition to the Student Rights and Responsibilities as set out in the Northwestern Polytechnic website

(<https://www.nwpolytech.ca/about/administration/policies/fetch.php?ID=69> ), the following guidelines will maintain an effective learning environment for everyone:

- Attendance: Regular attendance and class participation is expected of all students and is crucial to good performance in the course. Class interruption due to habitual late arrival or leaving early will not be permitted. You may be debarred from the final exam if your absences exceed 15% of class days (10 lecture classes).
- Check myClass as well as NWP email on a regular basis.
- Assignments must be submitted on time.
- Exams must be written on the days announced in class.
- If an emergency prevents attendance on an exam day, students must contact me as soon as possible via phone or email, and may be asked to provide documentation to justify their absence.
- No unspecified electronic devices will be permitted during exams.
- Complete daily homework. At least 1 hour of study per day outside of class time is required.
- Behaviors that interfere with learning are not acceptable.
- Take responsibility for your learning.

## 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.