

## DEPARTMENT OF ACADEMIC UPGRADING

### COURSE OUTLINE – WINTER 2025

#### MA0120 (A3): Mathematics Grade 20-1 Equivalent – 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>	James Iverson	<b>PHONE:</b>	780-539-2850
<b>OFFICE:</b>	C407	<b>E-MAIL:</b>	jiverson@nwpolytech.ca
<b>OFFICE HOURS:</b>	Tuesday 1:00-2:00PM, Friday 10:00-11:00PM or by appointment		

#### CALENDAR DESCRIPTION:

This course explores sequences and series, radical expressions and equations, quadratic equations and functions, linear and quadratic inequalities, linear-quadratic and quadratic-quadratic systems of equations, rational expressions and equations, absolute value functions, reciprocal functions, and trigonometry including the sine and cosine laws.

#### PREREQUISITE(S):

Complete 1 of the following:

- MA0110 – Mathematics Grade 10-C Equivalent (5)
- Equivalent math placement test score

Note: You may register in MA0120 if you achieved a mark of 60 percent or better in Alberta Education Math 10-C, or equivalent, within the previous two years

## REQUIRED TEXT/RESOURCE MATERIALS:

Pre-Calculus 11 Work Text (Pearson)

NON-GRAPHING scientific calculator, if you are purchasing, a TI-30X IIS is recommended.

graph paper (with you in class at all times)

Computer/Internet Access

## DELIVERY MODE(S):

- 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.
- Use of D2L is required

## LEARNING OUTCOMES:

After completing MA0120, students will be able to:

1. Sequences and Series
  - Analyze arithmetic sequences and series to solve problems.
  - Analyze geometric sequences and series to solve problems.
2. Radical Expressions and Equations
  - Solve problems that involve operations on radicals and radical expressions with numerical and variable radicands.
  - Solve problems that involve radical equations (limited to square roots).
3. Solving Quadratic Equations
  - Factor polynomial expressions in the form  $ax^2 + bx + c$ ,  $a^2x^2 - b^2y^2$ ,  $a(f(x))^2 + b(f(x)) + c$ , and  $a^2(f(x))^2 - b^2(g(y))^2$ .
  - Solve problems that involve quadratic equations using factoring, the method of square roots, completing the square, and the quadratic formula.
4. Analyzing Quadratic Functions
  - Analyze quadratic functions of the form  $y = a(x - p)^2 + q$  and determine the vertex, domain and range, direction of opening, axis of symmetry, and  $x$ - and  $y$ - intercepts.
  - Complete the square to change functions from the form  $y = ax^2 + bx + c$  to the form  $y = a(x - p)^2 + q$ .
5. Graphing Inequalities and Systems of Equations
  - Solve problems that involve quadratic inequalities in one variable.
  - Solve problems that involve linear and quadratic inequalities in two variables.

- Solve, algebraically and graphically, problems that involve systems of linear-quadratic and quadratic-quadratic equations in two variables.
6. Trigonometry
- Demonstrate an understanding of angles in standard position  $[0^\circ$  to  $360^\circ]$ .
  - Solve problems, using the three primary trigonometric ratios, for angles from  $0^\circ$  to  $360^\circ$  in standard position.
  - Solve problems, using the cosine law and the sine law, including the ambiguous case.
7. Rational Expressions and Equations
- Determine equivalent forms of rational expressions.
  - Perform operations on rational expressions.
  - Solve problems that involve rational equations.
8. Absolute Value and Reciprocal Functions
- Demonstrate an understanding of the absolute value of real numbers.
  - Graph and analyze absolute value functions (limited to linear and quadratic functions) to solve problems. Graph and analyze reciprocal functions (limited to the reciprocal of linear and quadratic functions).

## 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:

Assignments	10%
Section Tests	40%
Midterm	20%
Final	30%

## 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:

Math 0120 consists of 8 units divides into 4 sections

Tentative Exam dates

- |   |                           |
|---|---------------------------|
| <p>A. Sequence Series (text ch 1)<br/>Absolute Value and Radicals (text ch 2)</p>                     | <p><b>January 30</b></p>  |
| <p>B. Solving Quadratic Equations (text ch 3)<br/>Analyzing Quadratic Equation (text ch 4)</p>        | <p><b>February 27</b></p> |
| <p>Midterm Exam (20%)</p>   | <p><b>March 6</b></p>     |
| <p>C. Inequalities and Systems of Equations (ch 5)<br/>Trigonometry (ch 6)</p>                        | <p><b>March 25</b></p>    |
| <p>D. Rational Expressions and Equation (ch 7)<br/>Absolute Value and Reciprocal Functions (ch 8)</p> | <p><b>April 9</b></p>     |

## STUDENT RESPONSIBILITIES:

Refer to the NWP Policy on Student Rights and Responsibilities at <https://www.nwpolytech.ca/about/administration/policies/fetch.php?ID=69>

In addition, the following guidelines will maintain an effective learning environment for everyone. We ask the cooperation of all students in the following areas of the classroom environment.

1. Take responsibility for your learning.
2. Attendance: Regular attendance and class participation is expected of all students and is crucial to good performance in the course. You may be debarred from the final exam if your absences exceed 15% of class days (10 lecture classes).
3. Exams must be written on the days announced in class.
4. If an emergency prevents attendance on an exam day, students must contact me before the end of the exam (as soon as possible) via phone or email, students may be asked to provide documentation to justify their absence.
5. No unspecified electronic devices will be permitted during exams. This includes phones, watches etc.
6. Complete daily homework. At least 1.5 hours of study per day outside of class time is required to stay caught up.
7. Behaviors that interfere with learning are not acceptable.
8. Communicate all requests regarding appointments, etc. via email.

## 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.