

## SCHOOL OF BUSINESS AND EDUCATION- DEPARTMENT OF ACADEMIC UPGRADING

### COURSE OUTLINE – Winter 2026

#### MA0122 (A3): Mathematics Grade 20-2 Equivalent – 5 (7.5-0-0) HS

#### 112.5 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>       | A205A                 | <b>E-MAIL:</b> | <a href="mailto:dlachance@nwpolytech.ca">dlachance@nwpolytech.ca</a> |
| <b>OFFICE HOURS:</b> | TBD or by appointment |                |                                                                      |

#### CALENDAR DESCRIPTION:

This course is a modularized program of study which includes a review of inductive and deductive reasoning, spatial reasoning, properties of angles and triangles, acute triangle trigonometry, sine and cosine laws, radical expressions and equations, statistical reasoning, quadratic functions and quadratic equations, rates and proportional reasoning.

#### PREREQUISITE(S):

Complete 1 of the following:

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

#### REQUIRED MATERIALS:

- Appleby, Alan; Ranieri, Greg. Foundations of Mathematics 11 Workbook. Canada: Absolute Value Publications, 2011.
- NON-GRAPHING scientific calculator, if you are purchasing, a TI-30X IIS is recommended.



- Computer/Internet Access for MyClass and additional material (e.g. Desmos Graphing Calculator)

## 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 MA0122, students will be able to:

1. Measurement
  - Solve problems that involve application of rates; interpret rates in a given context. Draw a graph to represent rate and explain the relationship between slope and rate.
  - Solve problems that involve scale diagrams, using proportional reasoning.
  - Demonstrate an understanding of the relationships among scale factors, areas, surface areas and volumes of similar 2-D and 3-D objects.
2. Mathematical Reasoning:
  - Analyze and prove conjectures, using inductive and deductive reasoning, to solve problems
  - Analyze puzzles and games that involve spatial reasoning, using problem-solving strategies.
3. Reasoning with Angles and Triangles:
  - Derive proofs that involve the properties of angles and triangles.
  - Generalize the relationships between pairs of angles formed by transversals and parallel lines.
4. Trigonometry:
  - Solve problems that involve properties of angles and triangles as well as congruent triangles.
  - Solve problems that involve the cosine law and the sine law, excluding the ambiguous case.
5. Statistics:
  - Demonstrate an understanding of normal distribution, including standard deviation and z-scores. Explain, using examples, the properties of a normal curve, including the mean, median, mode, standard deviation, symmetry and area under the curve. Solve contextual problems involving interpretation of standard deviation, determine z-scores, and solve problems that involve normal distribution.

- Interpret statistical data using confidence intervals, confidence levels and margin of error. Make inferences and support a position by analyzing statistical data.



## 6. Radicals:

- Solve problems that involve operations on radicals and radical expressions with numerical and variable radicands (limited to square roots). Simplify radicals, express radicals as mixed or entire, and rationalize monomial denominators.
- Solve problems that involve radical equations (limited to square roots or cube roots); determine restrictions on the variable, determine and verify roots, identify and define extraneous roots.

## 7. Quadratic Functions

- Demonstrate an understanding of and determine the characteristics of quadratic functions including: vertex, intercepts, domain and range, and axis of symmetry. Sketch the graph of a quadratic function. Solve contextual problems involving the characteristics of a quadratic function.

## 8. Quadratic Equations

- Solve problems that involve quadratic equations. Determine intercepts and roots using factoring and the quadratic formula. Relate roots of a quadratic equation to zeroes of the corresponding quadratic function and x-intercepts of the graph of a function. Express a quadratic equation in factored form given the zeroes of the corresponding quadratic function or x-intercepts of the graph of the function. Solve contextual problems using a quadratic equation.

## TRANSFERABILITY:

Please consult the Alberta Transfer Guide for more information. You may check the transferability of this course at the Alberta Transfer Guide main page <http://www.transferalberta.alberta.ca>.

**\*\* For courses with alpha (letter) grading, a 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             | 8%  |
| Unit Tests              | 32% |
| Midterm                 | 25% |
| Final Exam (cumulative) | 35% |

## GRADING CRITERIA :

Please note that most institutions 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:

**MA0122** consists of 8 units (approx 1.5 weeks each)

1. Measurements
2. Mathematical Reasoning
3. Reasoning with Angles and Triangles
4. Trigonometry
5. Statistics
6. Radicals
7. Quadratic Functions
8. Quadratic Equations

Exam dates to be announced in class.

## STUDENT RESPONSIBILITIES:

In addition to the Student Rights and Responsibilities as set out in the Northwestern Polytechnic website (<https://www.nwpolytech.ca/leadership/policies/display?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.
- 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.
- Communicate all requests regarding appointments, etc. via email.
- 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 <https://www.nwpolytech.ca/about/polytechnic-leadership/policies-directory>.

**\*\*Note:** all Academic and Administrative policies are available on the same page.