NORTHWESTERN POLYTECHNIC

DEPARTMENT OF ACADEMIC UPGRADING

COURSE OUTLINE – Fall 2023

MA0120 (A2): 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.

INSTRUCTOR:	James Iverson	**PHONE:**	780-539-2850
OFFICE:	C407	**E-MAIL:**	JIverson@nwpolytech.ca
OFFICE HOURS:	Monday and Thursday 10:00-11:00 AM 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)/COREQUISITE: MA0110, Mathematics 10-C, or equivalent math placement test score

REQUIRED TEXT/RESOURCE MATERIALS:

Pre-Calculus 11 Work Text, (Pearson)

Pre-Calculus 11 Math XL, Single Student Access (Pearson)- Personal Code is provided with purchase of workbook/text.

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):

Classroom instruction. Use of D2L and computer program MathXL are 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 polynomials expressions in the form $ax^2 + bx + c$, $a^2x^2 - b^2y^2$, $a\big(f(x)\big)^2 + b\big(f(x)\big) + c$, and $a^2\big(f(x)\big)^2 - b^2\big(g(y)\big)^2$.
   - 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$[0^\circ \text{to } 360^\circ]$.
   - Solve problems, using the three primary trigonometric ratios, for angles from 0° to 360° 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:

Homework	5%
Assignments	10%
Section Tests	40%
Midterm	15%
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

A. Sequence Series (text ch 1)
Absolute Value and Radicals (text ch 2) — **September 27**

B. Solving Quadratic Equations (text ch 3)
Analyzing Quadratic Equation (text ch 4) — **October 24**

Midterm Exam (20%) — **October 31**

C. Inequalities and Systems of Equations (ch 5)
Trigonometry (ch 6) — **November 21**

D. Rational Expressions and Equation (ch 7)
Absolute Value and Reciprocal Functions (ch 8) **December 11**

STUDENT RESPONSIBILITIES:

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

MA0120 is a prerequisite for MA0130, which is required for many post-secondary programs. In taking this course, the primary goal is that students will develop their appreciation, understanding of and ability to use mathematics. Students in this course are also learning how to prepare for the demands and expectations of post-secondary education.

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 classroom deportment.

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.