DEPARTMENT OF ACADEMIC UPGRADING
COURSE OUTLINE   FALL 2023
MA0132 (A2) - Mathematics Grade 12 Equivalent (Principles 30-2) 5 (6-0-0) HS
6 hours/ week for 15 weeks (90 hours)

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:	Marty Tingstad	**PHONE:**	780 539-2071
OFFICE:	L224	**E-MAIL:**	mtingstad@nwpolytech.ca

OFFICE HOURS: **A205** 2:30-3:30 daily (if available)
                             L224 By appointment

CALENDAR DESCRIPTION:

MA0132 - Mathematics Grade 12 Equivalent (Principles 30-2) 5 (6-0-0) HS
This course explores set theory, counting methods, probability, rational expressions and equations, and functions (polynomial, exponential, logarithmic and sinusoidal).

PREREQUISITE(S)/COREQUISITE:

MA0122 or MA0120 or equivalent, or equivalent math placement test score, or
Math 20-1 or 60% or better in Math 20-2 or equivalent within the previous two years.

REQUIRED TEXT/RESOURCE MATERIALS:

YOU ARE NOT REQUIRED TO PURCHASE A TEXTBOOK/WORKBOOK FOR THIS COURSE. ALL REQUIRED MATERIALS WILL BE UPLOADED AS PDF'S TO MY CLASSROOM FOR YOU TO DOWNLOAD AND PRINT.

- Non-graphing scientific calculator. If you are purchasing, a TI-30X IIS is recommended.
- graph paper

DELIVERY MODE(S): FALL 2023 DELIVERY:

Classroom instruction. Use of D2L (myClass) is required.
         Note: NWP reserves the right to change the course delivery.

LEARNING OUTCOMES:
After completing MA0132, students will be able to:

<u>Unit 1</u> **(10%)**
Chapter 1   Logical Reasoning and Set Theory
- Use set notation and Venn diagrams.
- Determine the number of elements in a set.
- Determine the relationships between sets.
- Represent the intersection and union of two sets.
- Apply set theory to solve problems.
- Analyze puzzles and games

Chapter 3   Probability
- Distinguish between experimental and theoretical probability.
- Interpret odds and relate them to probability.
- Solve probability questions that involve permutations and combinations.
- Solve problems that involve mutually exclusive and non-mutually exclusive events.
- Solve problems that involve dependent and independent events.
- Analyze puzzles and games

<u>Unit 2</u> **(5%)**
Chapter 2   Counting Methods
- Apply the fundamental counting principle to determine the number of different ways to perform multi-step operations.
- Use factorial notation to determine permutations and combinations, or to solve for n or r.
- Determine the number of permutations of n different objects when all, or part, are used at a time.
- Determine the number of permutations of n objects when some of them are identical.
- Define combinations of n objects.
- Determine the number of different combinations when r objects are selected from n different objects.
- Apply the principle of combinations to different situations, and solve related problems.

<u>Unit 3</u> **(10%)**
Chapter 4   Rational Expressions and Equations
- Determine equivalent rational expressions.
- Determine non-permissible values.
- Perform operations with rational expressions: add, subtract, multiply and divide .
- Simplify rational expressions that require factoring of binomials.
- Solve rational equations.

Chapter 5   Polynomial Functions
- Identify characteristics of graphs of polynomial functions.
- Determine characteristics of graphs from the leading coefficient and constant term.
- Determine the best fit line for a set of data, and use the function to solve a problem.
- Determine the curve of best fit for a set of data and use the function to solve problems.

<u>Unit 4</u> **(10%)**
Chapter 6   Exponential Functions
- Use the equation of an exponential function to predict the characteristics of its graph and
- identify the graph.
- Solve exponential equations by using common bases and graphically.
- Solve problems modelled with exponential functions.
- Represent data using an exponential function and interpret the graph to solve problems.
- Solve loan, mortgage and depreciation problems using exponential functions.

Chapter 7 Logarithmic Functions
- Determine the characteristics of logarithmic functions from an equation.
- Estimate and determine the values of logarithmic expressions.
- Understand and apply the laws of logarithms.
- Use logarithms to solve exponential equations.
- Model situations using logarithmic functions and interpret the models.

<u>Unit 5</u> **(5%)**
Chapter 8 Sinusoidal Functions
- Sketch angles in degree and radian measure.
- Estimate the radian measure of an angle given the degree measure.
- Describe the characteristics of sinusoidal functions using their graphs and equations.
- Graph data for and model a situation using a sinusoidal function.
- Solve problems using sinusoidal function models.

TRANSFERABILITY:

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. This course is listed in the Alberta Transfer Guide as equivalent to Math 30-2. ** Although 50% (D) is considered a pass for this course, it is strongly recommend that you achieve a mark of 65% (C) to be successful at the next level.

COURSE SCHEDULE / TENTATIVE TIMELINE:
Math 0132 divides into 5 Sections or Units - Exam dates to be announced.

EVALUATIONS: Course final grade will be based on the following components.

5 Units	40%
Midterm Exam	25%
Final Exam (Cumulative)	35%

Each Unit Mark (weightings above) will be comprised of a Unit Review Assignment and a Unit Exam. All tests and exams MUST be written at the scheduled times unless **PRIOR** arrangements have been made with the instructor. A missed test (exam) will result in a score of ZERO on that test (exam). Only in very specific cases may student be given an opportunity to make up a missed exam (student will be presented with a different version of the exam). Doctor, lawyer or police documentation may be required. The final exam is 3 hours long and is scheduled by the registrars' office during NWP Exam weeks. Do not book vacation in this time period.

GRADING CRITERIA: Final Grades will be assigned on the Letter Grading System.

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

STUDENT RESPONSIBILITIES:

MA0130 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.

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.

The Academic Upgrading Department is an adult education environment. Students are expected to show respect for each other as well as faculty and staff. Students are expected to participate fully in achieving their educational goals.

Certain activities are disruptive and not conducive to an atmosphere of learning. In addition to the *Student Rights and Responsibilities* as set out in the Northwestern Polytechnic calendar, 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. Check **D2L** as well as **Northwestern Polytechnic email** on a regular basis.

2. **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.

3. **Once in class** – remain in class. Leaving to get a coffee is disruptive for others. Any behavior that interferes with the learning of others is not acceptable.

4. Assignments must be submitted on time.

5. Exams must be written on the days announced in class.

6. 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, and may be asked to provide documentation to justify their absence.

7. No unspecified electronic devices will be permitted during exams.

8. Complete daily homework.
   At least 1 hour of study per day outside of class time is required.

9. Take responsibility for your learning.

10. **Please communicate all requests regarding appointments, etc via email**.