SCIENCE DEPARTMENT

COURSE OUTLINE – Winter 2023

MA1600 (A3): Higher Arithmetic– 3 (3-1-0) 60 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:	Dr. Selcuk Aygin	**PHONE:**	(780) 539 2008
OFFICE:	J 210	**E-MAIL:**	saygin@nwpolytech.ca
OFFICE HOURS:	MT13.30-14.20 or by appointment.		

CALENDAR DESCRIPTION: Elementary Number Theory, Numeration Systems, Number Systems and Elementary Probability Theory are included in this course.

PREREQUISITE(S)/COREQUISITE: Mathematics 30-1 or equivalent or Mathematics 30-2 or equivalent

REQUIRED TEXT/RESOURCE MATERIALS:

- Gary L. Musser, Blake E. Peterson, William F. Burger, Mathematics for Elementary Teachers: A Contemporary Approach, 10th edition, Wiley

- Use of calculators is not permitted on the tests or exams.

DELIVERY MODE(S):
Lecture: A3 11.30 – 12.50 M & 10.00 – 11.20 F (Room J202)
Seminar: AS1 8.30 – 9.20 M (Room J228)

COURSE OBJECTIVES: This course is designed to provide students with a broader and deeper understanding of the mathematics underlying the elementary school curriculum. An emphasis will be placed on problem-solving and non-calculator-based techniques.
LEARNING OUTCOMES:

A successful student will be able to adequately demonstrate an understanding of the concepts stated below (among others):

- Apply and identify a variety of strategies for solving (mathematical) problems
- Recognize number patterns, including arithmetic and geometric sequences, and work with corresponding formulas in problem-solving applications
- Apply basic concepts and constructions of set-theory and use Venn diagrams to depict set relationships
- Count and perform basic arithmetic operations in non-standard base number systems
- Test for divisibility and primality, factor composite numbers, calculate greatest common divisors and least common multiples using multiple techniques
- Represent a real number on a number line, perform standard operations on real numbers (rational + irrational numbers), and order a set of real numbers
- Reduce rational number expressions to simplest form following rules for the order of operations and the field properties of the rational numbers
- Apply rules for operations with decimals
- Convert a rational number to a (terminating/repeating) decimal and vice versa
- Simplify square roots
- Solve and simplify linear equations and inequalities
- Solve problems involving ratios, proportion and percent
- Simplify rational exponential expressions, use scientific notation and absolute value
- Basic probability and expected value calculations

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.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:

3 Tests: Each worth 16.66% for a total of 50%. Tests will take place during Lecture Hours on the dates below.

> **Test Dates:**
> A3: Feb 6, Mar 6, Apr 3

13 Seminars: Best 10 marks out of 13, each worth 2% for a total of 20%. This mark will be based on the work submitted during scheduled seminar time.

Final Exam: Worth 30% and will be scheduled by the registrar sometime between April 13 and April 24. It is the student's responsibility to be available to write the final exam at the scheduled time. Writing early is not permitted.

Attendance: A bonus of 3% will be given to each student who has more than 70% attendance.

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	90-100		C+	2.3	67-69
A	4.0	85-89		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:

A3	Dates	Test	
Week 1	Jan 4 – 6		Chapter 1
Week 2	Jan 9 – 13		Chapter 1
Week 3	Jan 16 – 20		Chapter 2
Week 4	Jan 23 – 27		Chapter 3
Week 5	Jan 30 – Feb 3		Chapter 4
Week 6	Feb 6 – 10	Feb 6 (T1)	Chapter 4
Week 7	Feb 13 – 17		Chapter 5
Winter Break	Feb 20 – 24		
Week 8	Feb 27 – Mar 3		Chapter 6
Week 9	Mar 6 – 10	Mar 6 (T2)	Chapter 7
Week 10	Mar 13 – 17		Chapter 7
Week 11	Mar 20 – 24		Chapter 8
Week 12	Mar 27 – 31		Chapter 9
Week 13	Apr 3 – 7	Apr 3 (T3)	Chapter 9
Week 14	Apr 10 – 12		Chapter 11
Final	Apr 13 – 24		

STUDENT RESPONSIBILITIES: Students are responsible for all lecture material, seminars and readings. Students are expected to practice the material by doing problems from the textbook. Tests or seminars cannot be made up if missed. If a test or seminar is missed due to illness the weight will be distributed evenly with the other tests or seminars. A doctor's note and email will be required in all cases. No recording of any kind is allowed in the class, seminar or during consultation with the instructor.

STATEMENT ON PLAGIARISM AND CHEATING:

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the Northwestern Polytechnic

Calendar at https://www.nwpolytech.ca/programs/calendar/ or the Student Rights and Responsibilities policy which can be found at https://www.nwpolytech.ca/about/administration/policies/index.html. **Note: all Academic and Administrative policies are available on the same page.