



**DEPARTMENT OF SCIENCE**

**COURSE OUTLINE – WINTER 2016**

**MA1600 (A3): Higher Arithmetic – 3 (3-1-0) 60 Hours over 15 Weeks**

**INSTRUCTOR:** Tom McLeister

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**OFFICE:** J212

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**OFFICE HOURS:** M T W R 10:00am-11:00

**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:**

Miller, Heeren, Hornsby, Heeren: Mathematical Ideas 13<sup>th</sup> Edition, Pearson, 2016

<b>DELIVERY MODE(S):</b>	Lecture	M	11:30-12:50	J202
		F	10:00-11:20	J202
	Seminar	T	11:30-12:20	J229

**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:** By the end of the course, students will be able to:

- 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 (addition, subtraction, multiplication and division) 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 and rounding
- Convert a rational number to a (terminating/repeating) decimal and vice versa
- Simplify square roots and approximate the square root of a number using the Babylonian method
- Solve and simplify linear equations and inequalities
- Solve problems involving ratios, proportion and percent
- Simplify rational exponential expressions, use scientific notation and absolute value

**TRANSFERABILITY:** Please consult the Alberta Transfer Guide for current transfer information ([www.albertatransfer.com](http://www.albertatransfer.com))

\*\* 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:**

Worksheets:	10%
Assignments:	10%
Midterms:	20% (x2)
Final Exam:	40%

## GRADING CRITERIA:

Alpha Grade	4-point Equivalent	Percentage Guidelines	Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	95-100	C+	2.3	66-69
A	4.0	90-94	C	2.0	62-65
A-	3.7	85-89	C-	1.7	58-61
B+	3.3	80-84	D+	1.3	55-57
B	3.0	75-79	D	1.0	50-54
B-	2.7	70-74	F	0.0	00-49

**COURSE SCHEDULE/TENTATIVE TIMELINE:** We will cover approximately chapters 1-2, 4-7 in the textbook. Please keep in mind the following important dates:

Tues. Jan. 8: First Day of Classes

Fri. Feb. 12: **Midterm 1**

Feb. 15-19: Family Day/Winter Break (No classes)

Mon. Mar. 7: Last Day to Withdraw

Fi. Mar. 25: Good Friday: College Closed

Fri. Apr. 1: **Midterm 2**

Wed. Apr. 13: Last Day of Classes

## STUDENT RESPONSIBILITIES:

Refer to the College Policy on Student Rights and Responsibilities at [www.gprc.ab.ca/d/STUDENTRIGHTSRESPONSIBILITIES](http://www.gprc.ab.ca/d/STUDENTRIGHTSRESPONSIBILITIES)

## STATEMENT ON PLAGIARISM AND CHEATING:

Refer to the College Student Misconduct: Academic and Non-Academic Policy at [www.gprc.ab.ca/d/STUDENTMISCONDUCT](http://www.gprc.ab.ca/d/STUDENTMISCONDUCT)

\*\*Note: all Academic and Administrative policies are available at [www.gprc.ab.ca/about/administration/policies/](http://www.gprc.ab.ca/about/administration/policies/)

**FINAL EXAM:** The final exam will be written during the exam period, between April 15 and April 26 inclusive (including Saturdays and evenings). It is the student's

responsibility to be available to write the exam at the scheduled time. Writing early is not permitted.

**CALCULATORS:** Use of calculators is not permitted on the quizzes or exams.