

AFM 100, Foundational Math*8 Credits, 112 hours lecture*

This course enables students to develop an understanding of number sense which will be applied to further math concepts to help achieve an overall understanding of mathematics. Learning through the practice of algebraic; geometric; measurement; probability and statistical; and graphical theory using a model of real-world practical applications is an important aspect of this course.

InstructorInstructor Name: **Nancy Fitzgerald**

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Monday - Tuesday 12:00pm – 1:00pm and 3:00pm – 4:00pm

Thursday 3:00pm – 4:00pm

Friday: by appointment only

Hours of Instruction

Monday to Thursday 1:00pm – 3:00pm (Room CC220)

Required Resources**Foundations of Mathematics With Geometry, Trigonometry, and Statistics 3rd Edition**

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Course Outcomes

Upon successful completion of the course, the student shall be able to:

Number Sense

- Accurately perform the operations of addition, subtraction, multiplication and division using whole numbers, fractions and decimals (with and without the use of technology).
- Create and solve problems in context that involve the four operations using whole numbers, fractions, and decimals.
- Apply the rules for the order of operations to solve multi-step problems using whole numbers, fractions and decimals.
- Explain the meaning of integers and do all four operations with integers using BEDMAS.
- Solve applied problems involved rate, ratios, and proportion
- Solve applied problems involving percent

Algebra

- Compare and order rational numbers
- Determine the square root of a number

- Identify various parts of the number as base, exponent, and power
- Use the laws of exponents to simplify or solve problems
- Understand and define polynomials (limited to a degree of 1)
- Evaluate polynomial expressions through the operations of addition, subtraction, and multiplication.
- Divide polynomials by monomials
- Factor polynomials
- Write an expression for a given problem
- Understand the difference between an equation and an expression
- Manipulate equations
- Write and solve equations
- Solve problems involving single-variable, one-step equations with whole numbers, integers, fractions, and decimals

Geometry and Measurement

- Demonstrate an understanding of angles by:
 - Identifying examples of angles in the environment
 - Classifying angles according to their measure
 - Defining complementary and supplementary angles
 - Measuring and drawing angles, using a protractor
 - Understanding angle relationships of parallel lines and transversals
 - Calculating the sum of interior angles in a triangle
- Classify triangles according to the length of their sides (equilateral, isosceles, or scalene) and the measure of their interior angles (right, obtuse, or acute)
- Explain similar and congruent triangles
- Use Pythagorean Theorem to calculate the unknown side.
- Solve problems involving the radius, diameter, and circumference of a circle
- Describe the characteristics of 3-D objects and 2-D shapes and analyze the relationships among them.
- Calculate the perimeter, area and perimeter of 2-D figures

- Solve problems involving the area of triangles, parallelograms, and circles
- Calculate the surface area and volume of 3-D figures

Probability and Statistics

- Find the average (mean), median, mode, and range of a set of numbers and solve applied problems involving mean, median, and mode.
- Explain probability and find outcomes and sample space of an event.

Graphing

- Extract and interpret data from tables, pictographs, bar graphs, line graphs, and circle graphs
- Create a variety of graphs (line, bar, and circle) from a given table or set of data.
- Represent and describe patterns and relationships, using graphs and tables.
- Identify and plot points in the four quadrants of a Cartesian plane
- Graph relations and scatterplots and find the line of best fit

Evaluation

Module assignments	25%
Module tests	25%
Computer Lab assignments	15%
Midterm	15%
Final exam	20%
Total	100%

The minimum pre-requisite for progression is 1.7

Grading System

Descriptor	4.0 Scale	Percent
Excellent	4.0	96 – 100
	4.0	90 – 95
	3.7	85 – 89
Good	3.3	81 – 84
	3.0	77 – 80
	2.7	73 – 76
Satisfactory	2.3	69 – 72
	2.0	65 – 68
	Minimum Prerequisite	1.7
Poor	1.3	55 – 59
Minimum Pass	1.0	50 – 54
Failure	0.0	0 – 49

Proposed Schedule of Topics**Module 1: January 6th – January 24th****UNDERSTANDING WHOLE NUMBERS**

- Place value of whole numbers
- Representing whole numbers on a number line
- Rounding and estimating
- Addition, subtraction, multiplication and division (with and without calculator)
- Functions of a Calculator
- Introduction to Integers
- Introduction to decimals
- Introduction to exponents and square roots
- Word problems

Module 2: January 6th - January 24th**FRACTIONS**

- Prime and composite numbers
- Factor tree
- LCM Least Common Multiple
- GCF Greatest Common Factor
- Types of fractions
- Mixed numbers and improper fractions
- Equivalent fractions
- Reducing fractions
- LCD Lowest Common Denominator
- Addition, subtraction, multiplication and division of fractions
- Powers and square roots of fractions
- Word problems

Module 3: January 27th – January 30th**DECIMALS AND PRECENT**

- Place value of Decimals
- Rounding Decimals
- Addition, subtraction, multiplication, and division with decimals
- Powers and square roots of decimals
- Converting decimals to fractions
- Converting fractions to decimals
- Combined order of operations
- Word problems

Module 4: February 3rd – February 10th**RATES, RATIO, PROPORTIONS and INTEREST**

- Expressing ratios
- Equivalent ratios
- Rate, unit rate, and unit price
- Proportion equation
- Cross multiplication
- Exchange rates
- Buying selling currency
- Word problems

Module 5: February 10th – February 21st**MEASURES OF CENTRAL TENDENCY**

- Mean
- Medium
- Mode
- Mean, medium, and mode for grouped data
- Empirical relationship among mean, medium, mode
- Word problems

Module 6: February 6th – March 5th**OPERATIONS WITH EXPONENTS and INTEGERS**

- Properties (rules) of exponents
- Evaluating expressions with exponents using a calculator

- Roots, Fractional Exponents, and Negative exponents
- Absolute value, principle roots, and real numbers
- Scientific Notation
- Word problems

Module 7: March 9th – March 19th**ALGEBRA**

- Algebraic expressions
- Properties (rules) of exponents in algebraic expressions
- Addition, subtraction, multiplication, and division with algebraic expression
- Factoring algebraic expressions (polynomials and trinomials)
- Factoring perfect square trinomials
- Equivalent Equations
- Properties of equality
- Equations with fractional coefficients
- Equations with decimal coefficients
- Steps to solve algebraic equations with one variable
- Word problems

Module 8: March 23rd – March 27th**GEOMETRY**

- Lines and angles
- Classification and properties of plane figures
- Perimeter and area of plane geometric figures
- Surface area and volume of common solid objects
- Optimizations
- Word problems

Module 9: March 30th – April 3rd**TRIGONOMETRY**

- Similar and congruent triangles
- Pythagorean theorem
- Primary trigonometric ratios; sine, cosine, and tangent ratios of angles
- Using calculators to determine trigonometric ratios
- Using calculators to calculate angles
- Laws of sine and cosine

Module 10: April 3rd to April 9th**GRAPHING AND SYSTEMS OF LINEAR EQUATIONS**

- Rectangular coordinate system
- Graphing linear equations; Standard form, using table of values, and slope and the y-intercept form
- Solving systems of linear equations with two variables, graphically

** Final exam date week April 14-22nd, date to be announced (Please be advised travel accommodations will not be allowed.)

Please Note: Date and time allotted to each topic is subject to change.

Student Responsibilities

It is your responsibility as a student to contact the Office of the Registrar to complete the forms for Withdrawal or Change of Registration, and any other forms. Please refer to the list of important dates as noted in the Academic Schedule in the Keyano College credit calendar.

More specific details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

Student Attendance

Class attendance is useful for two reasons. First, class attendance maximizes a student's learning experience. Second, attending class is a good way to keep informed of matters relating to the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

It is the responsibility of each student to be prepared for all classes. Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and / or notes that may be due.

Academic Misconduct

Students are considered to be responsible adults and should adhere to principles of intellectual integrity. Intellectual dishonesty may take many forms, such as:

- Plagiarism or the submission of another person's work as one's own
- The use of unauthorized aids in assignments or examinations (cheating)
- Collusion or the unauthorized collaboration with others in preparing work
- The deliberate misrepresentation of qualifications
- The willful distortion of results or data
- Substitution in an examination by another person
- Handing in the same unchanged work as submitted for another assignment
- Breach of confidentiality.

The consequences for academic misconduct range from a verbal reprimand to expulsion from the College. More specific descriptions and details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

In order to ensure your understanding of the concept of plagiarism, you must successfully complete the online tutorial found on ilearn.keyano.ca. Then print the certificate, sign it, and show it to each of your instructors. Your course work will not be graded until you show this signed certificate.

Specialized Supports

The Student Academic Support Services (SASS) department: Accessibility Services, Skill Centre, Wellness Services and Student Life Department work together to support student success at Keyano College.

Accessibility Services (CC167) supports student success through group and individualized instruction of learning, study and test taking strategies, and adaptive technologies. Students with documented disabilities, or who suspect a disability, can meet with the Learning Strategists to discuss accommodation of the learning barriers that they may be experiencing. Students who have accessed accommodations in the past are encouraged to visit our office at their earliest opportunity to discuss the availability of accommodations in their current courses. Individual appointments can be made by calling 780-791-8934.

Skill Centre (CC119) provides a learning space where students can gather to share ideas, collaborate on projects and get new perspectives on learning from our tutorial staff. Students visiting the centre have access to one-to-one or group tutoring, facilitated study groups, and assistance in academic writing. The Skill Centre's Peer Tutor program provides paid employment opportunities for students who have demonstrated academic success and want to share what they have learned. Tutoring is available free to any students registered at Keyano College on a drop in basis, from 8:30 am to 5:00 pm Monday through Friday. Additional evening hours are subject to tutor availability and are posted in the Skill Centre.

Wellness Services (CC260) offers a caring, inclusive, and respectful environment where students can access free group and individual support to meet academic and life challenges. Mental Health Coordinators offer a safe and confidential environment to seek help with personal concerns. The Mindfulness Room in CC260 is available as a quiet space for students to relax during regular office hours. Wellness Service welcomes students to participate in any of the group sessions offered throughout the academic year addressing such topics as Mindfulness and Test Anxiety. Individual appointments can be made by calling 780-791-8934.

Student Life Department (CC210) is a place for students to go when they don't know who else can answer their questions. The staff will help students navigate barriers to success and if they don't know the answer, they will find it out. Student success is directly affected by how connected a student feels to their college. The student life department is there to help students get connected.

Please watch your Keyano email for workshop announcements from our Student Academic Support Services team.