

Mathematics 30-2 INT

*5 credits, 16 weeks, 6 hours*

Topics covered include properties of angles and triangles; oblique triangle trigonometry; systems of linear equations; operations (addition, subtraction, multiplication, division on rational expressions; solve rational equations; logarithms; numerical and logical reasoning Extensions to the core materials include a Business/Arts Prep module focussing on linear inequalities; probability; permutations, combinations and the fundamental counting principle and a Trades prep module which explores measurement involving triangles, quadrilaterals and regular polygons, including transformations on 2D shapes or 3D objects.

*Alberta Education Equivalency: Math 30-2*

*Prerequisite: Math 20-2 or Math 20-1 or permission of the Program Chair.*

## **INSTRUCTOR**

Gillian Whalen  
Conklin  
780-559-2434  
587-646-4358

<https://meetings.keyano.ca/intgillianwhalen/>

[gillian.whalen@keyano.ca](mailto:gillian.whalen@keyano.ca)

## **OFFICE HOURS**

Monday 11:00 – 12:00, 1:00 – 2:00  
Tuesday 4:00 – 5:00  
Wednesday 1:00 – 2:00  
Thursday 2:00 – 3:00

## **HOURS OF INSTRUCTION**

Monday 9:00 – 10:50  
Wednesday 9:00 – 10:50  
Thursday 9:00 – 10:50

## **REQUIRED TEXTBOOKS AND SUPPLIES**

Textbook: Principles of Mathematics 12: Alberta (Nelson)

(Required text & resources are available in the Keyano College Bookstore)

Materials: **TI83plus calculator**, geometry set, graph paper, binder, ruled paper, pencils, pen, and eraser

**COURSE OUTCOMES****COURSE GOAL:**

The main goals of mathematics education are to prepare students to:

- solve problems
- communicate and reason mathematically
- make connections between mathematics and its applications
- become mathematically literate
- appreciate and value mathematics
- make informed decisions as contributors to society

**GENERAL MATH PROGRAM OUTCOMES:**

Students will

- ✓ Develop spatial sense and proportional reasoning
- ✓ Develop algebraic reasoning and number sense
- ✓ Develop algebraic and graphical reasoning through the study of relations

**COURSE OUTCOMES:**

Upon successful completion of Math 30-2, students will be able to:

- ✓ Solve problems that involve the application of set theory.
- ✓ Solve problems that involve the Fundamental Counting Principle.
- ✓ Solve Problems that involve permutations.
- ✓ Solve problems that involve combinations.
- ✓ Interpret and assess the validity of odds and probability statements.
- ✓ Solve problems that involve the probability of mutually exclusive and non-mutually exclusive events.
- ✓ Determine equivalent forms of rational expressions (limited to numerators and denominators that are monomials and binomials).
- ✓ Perform operations on rational expressions (limited to numerators and denominators that are monomials and binomials).
- ✓ Solve problems that involve rational equations (limited to numerators and denominators that are monomials and binomials).
- ✓ Represent data, using polynomial functions (of degree  $\leq 3$ ), to solve problems.
- ✓ Solve problems that involve exponential equations.
- ✓ Represent data, using exponential and logarithmic functions, to solve problems.
- ✓ Demonstrate an understanding of logarithms and the laws of logarithms
- ✓ Solve problems that involve exponential equations.
- ✓ Represent data, using exponential and logarithmic functions, to solve problems.

**EVALUATION**

Type	Weighting
Assignments	20%
Projects	10%
Tests	30%
Final Exam	40%

The minimum pre-requisite for progression is 1.7 (refer to Grading System below)

**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
	<b>Minimum Prerequisite</b>	60 – 64
Poor	1.3	55 – 59
Minimum Pass	1.0	50 – 54
Failure	0.0	0 – 49

**PROPOSED TOPICS****PROPOSED TOPICS:**

1. **Chapter 1: Set Theory**
  - 1.1. Types of Sets and Set notation
  - 1.2. Exploring Relationships between Sets
  - 1.3. Intersection and Union of Two Sets
2. **Chapter 2: Counting Methods**
  - 2.1. Counting Principles
  - 2.2. Introducing Permutations and Factorial Notation
  - 2.3. Permutations When All Objects Are Distinguishable
  - 2.4. Permutations When Objects are Identical

- 2.5. Exploring Combinations
- 2.6. Combinations
- 2.7. Solving Counting Problems
- 3. **Chapter 4: Rational Expressions and Equations**
  - 3.1. Equivalent Rational Expressions
  - 3.2. Simplifying Rational Expressions
  - 3.3. Multiplying and Dividing Rational Expressions
  - 3.4. Adding and Subtracting Rational Expressions
  - 3.5. Solving Rational equations
- 4. **Chapter 6: Exponential Functions**
  - 4.1. Exploring the Characteristics of Exponential Functions
  - 4.2. Relating the Characteristics of an Exponential Function to Its Equation
  - 4.3. Solving Exponential Equations
  - 4.4. Modeling Data Using Exponential Functions
  - 4.5. Financial Applications Involving Exponential Functions
- 5. **Chapter 7: Logarithmic Functions**
  - 5.1. Characteristics of Logarithmic Functions
  - 5.2. Evaluating Logarithmic Expressions
  - 5.3. Laws of Logarithms
  - 5.4. Solving Exponential Equations Using Logarithms
  - 5.5. Modeling Data Using Logarithmic Functions

### Performance Requirements

1. Students are required to attend via Adobe Connect for **each** class, so success is improved by regular attendance. Extended or frequent absences cannot easily be accommodated and could impact your overall mark. Some suggestions for handling occasional absences include:
  - a. Checking the Calendar of Events and PowerPoint slides covered in each chapter by logging into **ilearn Keyano** (<http://ilearn.keyano.ca>\*\*).
  - b. Finding a “classroom buddy” who you can contact for details regarding what you have missed, because exact slides and daily homework will **not** be recorded on **ilearn**. Classes that have been recorded will be available on the course calendar to view.
  - c. Keeping in touch with me via email. Office hours which are online, are for you to seek extra help and to see me with concerns about the course.
2. To ensure that everyone is evaluated fairly, and that you receive your marks and feedback in a timely fashion, assigned work will receive:
  - a. Full marks when received on the due date. Students will need to scan and email assignments by the **end of the scheduled class** to be considered on time. All assignments must be scanned in PDF form.
  - b. A mark of zero, if received after I have returned them ...
3. To ensure that it is your learning, your thoughts, and your work that is being evaluated,
  - a. Work submitted by non-attending students may not be marked, so please keep in touch!
  - b. Any work showing evidence of copying or plagiarism will receive a mark of zero (see “Student Rights and Responsibilities” in the Credit Calendar).
  - c. A missed exam (midterm) may be written at an alternate time only under certain exceptional circumstances, at the instructor’s discretion. The instructor must be contacted within 24 hours of the scheduled exam, and documentation (e.g. a doctor’s note) provided.
  - d. The final exam will be written on the date scheduled by the College; otherwise, the procedure for “Deferred Final Examination” in the Credit Calendar is to be followed. If you are unable to write on the

scheduled date, contact must be made within 48 hours with the chairperson to determine eligibility for special examinations or deferred examinations (appropriate documentation is required).

\*\*Should you have trouble logging into **ilearn Keyano**, please contact any member of the library staff, or email Keyano Information and Technology Services ([ITShelpdesk@keyano.ca](mailto:ITShelpdesk@keyano.ca)) during business hours.

### **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

Penalties for academic offences range from a verbal reprimand to dismissal from the College, and in certain circumstances may involve legal action.

### **Specialized Supports**

#### **Counselling and Disability Services**

Counselling Services provides a wide range of specialized counselling services to prospective and registered students, including personal, career and academic counselling.

#### **SKILL Centre**

The SKILL Centre is a learning space in the Clearwater Campus at Keyano College where students can gather to share ideas, collaborate on projects and get new perspectives on learning from our tutorial staff.

The SKILL Centre, through a variety of delivery methods, provides assistance in skill development to Keyano students. Assistance is provided by instructors, staff and student tutors. Individuals wishing to improve their mathematics, writing, grammar, study, or other skills, can take advantage of this unique service.

**Authorization**

This course outline has been reviewed and approved by the Program Chair.



[Gillian, Whalen], Instructor

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Lisa Turner, Chair

Date Authorized

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Guy Harmer, Dean

Date Authorized