Course Outline

College and Career Preparation

Winter, 2018

MATH 20-1A, Mathematics 20-1
5 credits, 6 hours lecture

Topics covered include oblique triangle trigonometry; perform all operations (addition, subtraction, multiplication, division) on radicals and rational expressions; solve radical, rational & quadratic equations; analyze & solve applications involving arithmetic & geometric sequence & series; graph, analyze and apply quadratic, absolute value & reciprocal functions; solve systems involving both linear and quadratic equations; graph, analyze and solve linear and quadratic inequalities.

Alberta Education Course Equivalency: Math 20-1
Prerequisite: Math 10, Math 10C, or Math 20-2, or permission from the Program Chair

Instructor:
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Office Hours:

Monday:	4:00 - 4:50
Wednesday:	2:00 – 2:50
Thursday	10:00 – 11:50
Friday	10:00 – 10:50

Hours of Instruction

Monday	2:00 - 3:50 (CC233)
Tuesday:	2:00 – 3:50 (CC233)
Thursday	2:00 – 3:50 (CC233)

Required Resources

Pre-Calculus 11 (McGraw-Hill Ryerson): Author: Bruce McAskill et al ISBN:0-07-073873-4

Scientific calculator or a graphing calculator.

Course Outcomes

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

Sequences and Series

- Analyze arithmetic sequences and series to solve problems.
- Analyze geometric sequences and series to solve problems

Trigonometry

- Demonstrate an understanding of angles in standard position [0^o to 360^o].
- Solve problems, using the three primary trigonometric ratios for angles from 0° to 360° in standard position.
- Solve problems, using the cosine law and sine law, including the ambiguous case

Quadratics

- Analyze quadratic functions of the form $y = a(x - p)^2 + q$ and determine the:
  - Vertex
  - domain and range
  - direction of opening
  - axis of symmetry, *x*- and *y*-intercepts
- Analyze quadratic functions of the form $y = ax^2 + bx + c$ to identify characteristics of the corresponding graph, including:
  - Vertex
  - domain and range
  - direction of opening
  - axis of symmetry
  - *x*- and *y*-intercepts
- Analyze quadratic functions using transformations
- Convert quadratic functions from standard form to vertex form
- Solve problems that involve quadratic equations
- Factor quadratic expressions
- Solve quadratic equations by factoring, completing the square, quadratic formula
- Use the discriminant to determine the nature of roots of a quadratic equation

Radical Expressions and Equations

- Solve problems that involve operations on radicals and radical expressions with numerical and variable radicands.
- Solve problems that involve radical equations (limited to square roots).

Rational Expressions and Equations

- Determine equivalent forms of rational expressions (limited to numerators and denominators that are monomials, binomials or trinomials).
- Perform operations on rational expressions (limited to numerators and denominators that are monomials, binomials or trinomials).
- Solve problems that involve rational equations (limited to numerators and denominators that are monomials, binomials or trinomials).

Absolute Value and Reciprocal Functions

- Demonstrate an understanding of the absolute value of real numbers
- Graph and analyze absolute value functions (limited to linear and quadratic functions) to solve problems.
- Graph and analyze reciprocal functions (limited to the reciprocal of linear and quadratic functions)

Systems of Equations and Inequalities

- Solve, algebraically and graphically, problems that involve systems of linear-quadratic and quadratic-quadratic equations in two variables.

Linear and Quadratic Inequalities

- Solve problems that involve linear and quadratic inequalities in two variables.
- Solve problems that involve quadratic inequalities in one variable

Evaluation

Assignments	20%
Unit Tests	30%
Projects	10%
Final Exam	40%
Total	100%

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

Grading System

Descriptor	4.0 Scale	Percent
	4.0	96 – 100
Excellent	4.0	90 – 95
	3.7	85 – 89
	3.3	81 – 84
Good	3.0	77 – 80
	2.7	73 – 76
	2.3	69 – 72
Satisfactory	2.0	65 – 68
Minimum Prerequisite	1.7	60 – 64
Poor	1.3	55 – 59
Minimum Pass	1.0	50 – 54
Failure	0.0	0 – 49

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

Performance Requirements

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

Counselling and Accessibility 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.