

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:

Christel Kennedy

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Office Hours:

Monday: 2:00 - 2:50

Wednesday: 2:00 – 2:50

Thursday 11:00 – 11:50; 2:00 – 2:50

Friday 12:00 – 12:50

Hours of Instruction

Monday 12:00 - 1:50 (CC215)

Wednesday: 12:00 – 1:50 (CC215)

Thursday 12:00 – 1:50 (CC215)

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° to 360°].
- 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
- Analyse 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 |
|--------------|-----------------------------|----------|
| 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 |

Please Note:

Date and time allotted to each topic is subject to change.

Course Specific Policies

1. **Attendance Policy:** This course is designed as a **face-to-face course**, so success is improved by being on time and regularly attending. Extended or frequent absences *for any reason need to be discussed with your instructor* because of the potential impact on your overall mark. Additionally, a **planned extended absence**, at any time in the semester, must be discussed with the Chair of the program, Lisa Turner at lisa.turner@keyano.ca, **prior** to said absence. Most importantly, **be sure to communicate with your instructor** (In person or in a voicemail to my land line office phone number on the front page of the course outline). The best way for handling an occasional lecture absence is to contact a classmate from your group for details regarding what you have missed.
2. **Electronic Devices Policy:** electronic devices, including headphones/earbuds/watches and the like, are not permitted once class has started. Sounds and video on all cell phones/devices should be turned

off during class and the phone and/or other electronic device(s) should be put away (out of reach – out of view) until break time. For example, under the desk top, in your pocket, while charging close to your desk, or on your lap is not considered out of reach or out of view. If you need to text or take an urgent call during class time, get the instructor's permission and leave the room to avoid disrupting others. Please discuss with the instructor what may be considered an urgent call or text, for example, a child illness or injury is urgent.

Using electronic devices to record the class in any way (audio, video, photos, etc.) is not permitted with the exception of photos of the whiteboard taken with permission of the instructor and end of term or special celebration class photos with the instructor with permission (not to be posted on social media or other sharing platform(s)).

. Research has shown that usage of electronic devices during class lectures distracts from your learning and the learning of others. Unless they are a required component of the course, you should refrain from using your electronic device during class time.

3. **Course Policies and Procedures:** A core expectation of this class is that you will be able to meaningfully participate in its educational activities. This means being clear that each student, including yourself, is here for different academic/career goals and reasons. More specifically, this course is an important program pre-requisite for many students. So, for the benefit of your classmates, it is crucial to always demonstrate that you are a student in the class by establishing and maintaining your reputation as a student with the instructor and with your fellow students. This includes refraining from hindering or compromising your educational experience or that of others. You will need to do the following to ensure your and other's success:
 - a. ***Students should be as ready as possible for learning during scheduled classes.*** Get the most from the learning opportunities a college upgrading class provides. You have joined a group of adult students with wide ranging educational backgrounds, steps from pursuing career training that can change their lives and the lives of others. Enjoy the class, participate in the class, and focus on maintaining a respectful, close, team/family-like atmosphere with your classmates and instructor at all times. Be mindful of the potential negative impact of side conversations with the student next to you on class focus while instruction is going on or a student presentation is being given.
 - b. ***Required texts are required equipment for the course.*** It is recommended that you make the necessary arrangements to acquire the texts, which are specifically intended to provide the foundation for your learning of the course material. The majority of course learning activities depend on having a text to work from. Temporary sharing of texts and course materials with another student and limited photocopying of course resources is permitted in order to put you in a better position to actively participate with the course material, should you not have the texts.
 - c. ***Arrive on time for class.*** Consistently late arrival to class disrupts the learning experience for you and for others. Communication with the instructor for occasional late arrival that is beyond your control and for consistently late arrival to class is required. Extenuating circumstances can be accommodated at the instructor's discretion. For example, parking issues, delays caused by weather, and other valid, unexpected events.
4. **Other Course Policies and Procedures:**
 - a. the majority of our work is done during class time. Extra practice is always recommended by the instructor and can be done outside of class, but is not considered homework.
 - b. any work showing evidence of copying or plagiarism is a serious academic infraction. (see "Student Rights and Responsibilities" in the Credit Calendar).
 - c. This course will build on skills that you are already expected to have based on being accepted to this course. Therefore, this is not a remedial Math course. To improve your Math skills, extra

practice through your own initiative and extra work on practice exercises from our texts will be recommended by the instructor throughout the course.

- d. avoid scheduling appointments during class time, including in-college appointments. Exceptions may apply. Talk with your instructor.
- e. a missed test 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.
- f. 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, for any reason, you feel that you may be unable to follow the course specific policies as prescribed in this course outline including, for example, the electronic devices policy, please arrange for a meeting with the program Chair immediately.

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.

Specialized Supports

The Student Academic Support Services (SASS) department: Accessibility Services, Skill Centre and Wellness Services, 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 9:00 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.

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