

# COURSE SYLLABUS



COURSE TITLE:	Math 077
CLASS SECTION:	001
TERM:	2022W
COURSE CREDITS:	4
DELIVERY METHOD(S):	Lecture

Camosun College campuses are located on the traditional territories of the Lək̓ʷəŋən and W̱SÁNEĆ peoples. We acknowledge their welcome and graciousness to the students who seek knowledge here. Learn more about Camosun's [Territorial Acknowledgement](#).

For COVID-19 information please visit <https://legacy.camosun.ca/covid19/index.html>.

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*Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable explanation in advance, you will be removed from the course and the space offered to the next waitlisted student.*

## INSTRUCTOR DETAILS

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NAME:	Crystal Lomas
EMAIL:	LomasC@camosun.ca
OFFICE:	Ewing 270
HOURS:	By appointment, please email

*As your course instructor, I endeavour to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me. Camosun College is committed to identifying and removing institutional and social barriers that prevent access and impede success.*

## CALENDAR DESCRIPTION

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Students will develop the foundation in algebra and trigonometry that will enable further study of mathematics or satisfy program and entrance requirements for Precalculus 11. Topics include linear equations and inequalities; function notation; linear functions; systems of linear equations in two variables; polynomial, rational, and radical expressions and equations; quadratic functions and equations; and triangle trigonometry including the Sine and Cosine Laws.

PREREQUISITE(S):	One of: C in Foundations of Math and Pre-calculus 10, C- in Pre-calculus 11, C in MATH 053, C in MATH 075
CO-REQUISITE(S):	None.
EXCLUSION(S):	None.

## COURSE LEARNING OUTCOMES / OBJECTIVES

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The learning outcomes in this course meet the required learning outcomes in Mathematics: Advanced Level (Algebraic) as outlined in the BC ABE Articulation Handbook 2018/19 Edition. Upon successful completion of the course, a student will be able to:

1. Demonstrate basic algebraic skills, and use a scientific calculator to evaluate complex expressions with

emphasis on using special keys to perform a variety of functions. In particular:

- a. perform operations with real numbers including absolute value and exponential notation,
  - b. simplify expressions using rules for order of operations and properties of exponents,
  - c. translate common language into algebraic expressions,
  - d. evaluate algebraic expressions by substitution,
  - e. simplify algebraic expressions with nested parentheses, and
  - f. use scientific notation.
2. Solve linear equations and inequalities in one variable. In particular:
- a. solve first degree/linear equations in one variable,
  - b. solve simple formulas for a given variable,
  - c. solve and graph linear inequalities in one variable,
  - d. write set-builder and/or interval notation for the solution set or graph of an inequality,
  - e. use linear equations, formulas and linear inequalities to solve applied problems,
  - f. find the union or intersection of two sets,
  - g. solve and graph compound inequalities (conjunctions and disjunctions), and
  - h. simplify expressions containing absolute value and solve absolute value equations.
3. Employ two-dimensional graphing techniques for relations and functions. In particular:
- a. write linear relations in slope-intercept form,
  - b. graph linear equations and non-linear equations using a table of values,
  - c. graph linear equations using the y-intercept and slope and using x-and y-intercepts,
  - d. graph horizontal and vertical lines,
  - e. find the slope of a line given two points on the line,
  - f. find the equation of a line given graphic data: the slope and y-intercept, the slope and one point, or two points on the line,
  - g. determine whether a pair of lines is parallel, perpendicular or neither,
  - h. find the equation of a line parallel or perpendicular to a given line and through a given point,
  - i. use the definition of function and the vertical line test to distinguish between functions and non-functions,
  - j. use and interpret function notation to evaluate functions for given x-values and find x-values for given function values,
  - k. determine the domain and range of a function,
  - l. use a table of values to graph linear functions and non-linear functions such as quadratic, cubic, square root, reciprocal, and absolute value functions, and
  - m. graph linear inequalities in two variables.
4. Solve systems of linear equations in two variables. In particular:
- a. solve by graphing, substitution and elimination methods,
  - b. determine if a system of equations will have no, one, or an infinite number of solutions, and
  - c. use systems of equations to solve applied problems.
5. Solve foundational problems with polynomial expressions and equations. In particular:
- a. determine the degree of a polynomial,
  - b. distinguish between monomials, binomials, trinomials, and other polynomials,
  - c. add, subtract, multiply polynomials,
  - d. divide polynomials by monomials,
  - e. factor polynomials using an appropriate strategy or a combination of techniques: common factors, difference of squares, difference and sum of cubes, perfect square trinomials, trial/error, or grouping,
  - f. solve polynomial equations using the principle of zero products,
  - g. solve applied problems using polynomial equations/functions,
  - h. divide polynomials and binomials using long division, and
  - i. divide polynomials and binomials using synthetic division.
6. Solve foundational problems involving rational expressions. In particular:
- a. identify situations and find values for which a rational expression will be undefined,

- b. simplify rational expressions,
  - c. add, subtract, multiply and divide rational expressions,
  - d. solve rational equations and check the solutions,
  - e. solve formulas involving rational expressions for a given variable,
  - f. solve applied problems that can be modelled with rational equations,
  - g. simplify complex fractions,
  - h. express variations in the form of equations (direct, inverse, joint, combined), and
  - i. solve problems involving direct, inverse, joint and combined variation.
7. Perform mathematical operations involving radicals and rational exponents. In particular:
- a. identify situations and find values for which a radical expression will be undefined,
  - b. write radicals as powers with rational exponents and vice-versa,
  - c. use rational exponents to simplify radical expressions,
  - d. simplify, add, subtract, multiply and divide radical expressions (numeric or algebraic,)
  - e. rationalize denominators in fractional expressions containing radicals (including the use of conjugates,)
  - f. solve equations involving radical expressions or powers with rational exponents and check for extraneous roots,
  - g. solve formulas involving powers and square roots for a given variable,
  - h. solve applied problems which can be modelled by radical equations, and determine if solutions are reasonable given the context of the problem,
  - i. identify imaginary and complex numbers and express them in standard form, and
  - j. add, subtract, multiply, and divide complex numbers.
8. Develop facility with solving problems involving quadratic functions. In particular:
- a. solve quadratic equations by factoring, using the principle of square roots, completing the square, and employing the quadratic formula,
  - b. use the discriminant to identify the number and type of solutions of a quadratic equation,
  - c. write a quadratic equation given its solutions,
  - d. solve rational and radical equations reducible to a quadratic pattern and check that answers are reasonable,
  - e. solve selected polynomial equations that can be factored simplifying to linear and/or quadratic factors,
  - f. graph quadratic functions of the form  $f(x) = a(x - h)^2 + k$  and demonstrate translations, reflections, and stretching/shrinking resulting from changes in the function equation,
  - g. find the vertex, line of symmetry, minimum or maximum values, x-and y-intercepts, domain and range, given the function  $f(x) = a(x - h)^2 + k$ ,
  - h. rewrite  $f(x) = ax^2 + bx + c$  as  $f(x) = a(x - h)^2 + k$  by completing the square,
  - i. solve problems that can be modelled using quadratic equations such as maximum and minimum problems,
  - j. solve quadratic equations having complex number solutions.
9. Use triangle trigonometry to solve problems involving all types of triangles. In particular:
- a. label the sides of a right triangle with respect to a given angle,
  - b. determine sine, cosine, and tangent ratios of an angle in a right triangle using the side lengths,
  - c. use a scientific calculator to find the trigonometric value for a given angle and find an angle given its trigonometric value,
  - d. solve right triangles and applied problems using the basic trigonometric ratios, the Pythagorean Theorem, and the sum of the angles of a triangle ( $180^\circ$ ),
  - e. use the Law of Sines and the Law of Cosines to solve non-right (oblique) triangles and applied problems,
  - f. determine the quadrant for positive and negative angles in standard position,
  - g. identify coterminal angles,
  - h. identify reference angles,
  - i. determine all trigonometric function values for angles in standard position,

- j. solve trigonometric equations involving the primary functions over a specific domain,
- k. find exact values of the trigonometric ratios for special angles, and
- l. find exact values of the trigonometric functions for angles with special reference angles.

## REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

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### 1. Textbooks

- *Intermediate Algebra 2e* by Lynn Marecek & Andrea Honeycutt Mathis.  
Available from <https://openstax.org> and on D2L.
- *Intermediate Algebra and Trigonometry* by Anna Kuczynska.  
Available from <https://open.bccampus.ca/browse-our-collection/find-open-textbooks/> and on D2L.
- Excerpts from *Algebra and Trigonometry 5e* by Beecher, Penna & Bittinger.  
Available on D2L.

We will use Chapters 1-9 of *Intermediate Algebra 2e* as our main text for Units 1-8 and the excerpts from *Algebra and Trigonometry 5e* as our main text for Unit 9. We will supplement with *Intermediate Algebra and Trigonometry* as needed. Please see *Recommended Homework* on D2L for details.

### 2. Calculator

The Sharp EL-531 is the only calculator permitted for quizzes, tests, and the final exam.

### 3. Other

- Graph paper
- Ruler
- Scanner or scanner app (recommended)
- Mobile device for class time (recommended)

## COURSE SCHEDULE, TOPICS, AND ASSOCIATED PREPARATION / ACTIVITY / EVALUATION

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The following schedule and course components are subject to change with reasonable advance notice, as deemed appropriate by the instructor.

WEEK	ACTIVITY or TOPIC	OTHER NOTES
1	Unit 1: Review	
2	Unit 2: Linear Equations and Inequalities	A1 Due Jan 21
3	Unit 3: Functions and Graphs	A2 Due Jan 28
4	Unit 3 & Unit 4	Unit 1-3 Test Feb 3
5	Unit 4: Systems and Polynomials	A3 Due Feb 11
6	Unit 5: Factoring and Polynomial Division	A4 Due Feb 18
7	<i>Reading Break</i>	
8	Review & Unit 6	Unit 4-5 Test Mar 3

WEEK	ACTIVITY or TOPIC	OTHER NOTES
9	Unit 6: Rational Expressions and Equations	A5 Due Mar 11
10	Unit 7: Radical Expressions and Equations	A6 Due Mar 18
11	Unit 8: Quadratic Equations and Functions	Unit 6-7 Test Mar 24
12	Unit 8: Quadratic Equations and Functions	A7 Due Apr 1
13	Unit 9: Trigonometry	A8 Due Apr 8
14	Course Review	Unit 8-9 Test Apr 14

Students registered with the Centre for Accessible Learning (CAL) who complete quizzes, tests, and exams with academic accommodations have booking procedures and deadlines with CAL where advanced notice is required. Deadlines can be reviewed on the [CAL exams page](http://camosun.ca/services/accessible-learning/exams.html). <http://camosun.ca/services/accessible-learning/exams.html>

## EVALUATION OF LEARNING

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DESCRIPTION	WEIGHTING
Assignments (8 or 9)	15%
Tests (4)	35%
Final Exam	50%
<b>TOTAL</b>	<b>100%</b>

If you have a concern about a grade you have received for an evaluation, please come and see me as soon as possible. Refer to the [Grade Review and Appeals](http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf) policy for more information.  
<http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf>

## COURSE GUIDELINES & EXPECTATIONS

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### Late/missed course items

Under normal circumstances, each course item must be completed by its due date and will receive a 0 if not submitted on time. If you miss a course item due to an emergency, contact me as soon as possible.

### Class time

Be prepared for each class by completing the assigned readings/practice and bringing questions. We will discuss concepts, complete examples, and ask/answer questions during class time. We will also have polls, quizzes, and tests during class time. Always be respectful to your classmates and instructor. This includes being on time for class and allowing others to speak without interruption. Follow all of Camosun's health guidelines carefully.

If you feel unwell or are required to isolate

Stay home and email me.

You can still participate in course activities (depending on your health), and you will not be penalized for missing class.

- Polls and quizzes are available online, assignments can be digitally submitted, and tests can usually be made up or omitted.
- Lecture notes are available before, during, and after class.

D2L

This course uses Desire2Learn (D2L) for course materials, announcements, grades, etc. Make sure you have access to D2L and either check it regularly or turn on notifications.

Zoom

We will use Zoom for most office hours and for discussions. Please sign up for Zoom and download the app to participate.

## STUDENT RESPONSIBILITY

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Enrolment at Camosun assumes that the student will become a responsible member of the College community. As such, each student will display a positive work ethic, assist in the preservation of College property, and assume responsibility for their education by researching academic requirements and policies; demonstrating courtesy and respect toward others; and respecting expectations concerning attendance, assignments, deadlines, and appointments.

## SUPPORTS AND SERVICES FOR STUDENTS

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Camosun College offers a number of services to help you succeed in and out of the classroom. For a detailed overview of the supports and services visit <http://camosun.ca/students/>.

Support Service	Website
Academic Advising	<a href="http://camosun.ca/advising">http://camosun.ca/advising</a>
Accessible Learning	<a href="http://camosun.ca/accessible-learning">http://camosun.ca/accessible-learning</a>
Counselling	<a href="http://camosun.ca/counselling">http://camosun.ca/counselling</a>
Career Services	<a href="http://camosun.ca/coop">http://camosun.ca/coop</a>
Financial Aid and Awards	<a href="http://camosun.ca/financialaid">http://camosun.ca/financialaid</a>
Help Centres (Math/English/Science)	<a href="http://camosun.ca/help-centres">http://camosun.ca/help-centres</a>
Indigenous Student Support	<a href="http://camosun.ca/indigenous">http://camosun.ca/indigenous</a>
International Student Support	<a href="http://camosun.ca/international/">http://camosun.ca/international/</a>
Learning Skills	<a href="http://camosun.ca/learningskills">http://camosun.ca/learningskills</a>
Library	<a href="http://camosun.ca/services/library/">http://camosun.ca/services/library/</a>
Office of Student Support	<a href="http://camosun.ca/oss">http://camosun.ca/oss</a>

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Support Service	Website
Ombudsperson	<a href="http://camosun.ca/ombuds">http://camosun.ca/ombuds</a>
Registration	<a href="http://camosun.ca/registration">http://camosun.ca/registration</a>
Technology Support	<a href="http://camosun.ca/its">http://camosun.ca/its</a>
Writing Centre	<a href="http://camosun.ca/writing-centre">http://camosun.ca/writing-centre</a>

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If you have a mental health concern, please contact Counselling to arrange an appointment as soon as possible. Counselling sessions are available at both campuses during business hours. If you need urgent support after-hours, please contact the Vancouver Island Crisis Line at 1-888-494-3888 or call 911.

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## COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

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### Academic Accommodations for Students with Disabilities

The College is committed to providing appropriate and reasonable academic accommodations to students with disabilities (i.e. physical, depression, learning, etc). If you have a disability, the [Centre for Accessible Learning](#) (CAL) can help you document your needs, and where disability-related barriers to access in your courses exist, create an accommodation plan. By making a plan through CAL, you can ensure you have the appropriate academic accommodations you need without disclosing your diagnosis or condition to course instructors. Please visit the CAL website for contacts and to learn how to get started:

<http://camosun.ca/services/accessible-learning/>

### Academic Integrity

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.pdf> for policy regarding academic expectations and details for addressing and resolving matters of academic misconduct.

### Academic Progress

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.1.pdf> for further details on how Camosun College monitors students' academic progress and what steps can be taken if a student is at risk of not meeting the College's academic progress standards.

### Course Withdrawals Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.2.pdf> for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit <http://camosun.ca/learn/fees/#deadlines>.

### Grading Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf> for further details about grading.

### Grade Review and Appeals

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf> for policy relating to requests for review and appeal of grades.

### Mandatory Attendance for First Class Meeting of Each Course

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable reason in advance, you will be removed from the course and the space offered to the next waitlisted student. For more information, please see the “Attendance” section under “Registration Policies and Procedures” (<http://camosun.ca/learn/calendar/current/procedures.html>) and the Grading Policy at <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf>.

### Medical / Compassionate Withdrawals

Students who are incapacitated and unable to complete or succeed in their studies by virtue of serious and demonstrated exceptional circumstances may be eligible for a medical/compassionate withdrawal. Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.8.pdf> to learn more about the process involved in a medical/compassionate withdrawal.

### Sexual Violence and Misconduct

Camosun is committed to creating a campus culture of safety, respect, and consent. Camosun’s Office of Student Support is responsible for offering support to students impacted by sexual violence. Regardless of when or where the sexual violence or misconduct occurred, students can access support at Camosun. The Office of Student Support will make sure students have a safe and private place to talk and will help them understand what supports are available and their options for next steps. The Office of Student Support respects a student’s right to choose what is right for them. For more information see Camosun’s Sexualized Violence and Misconduct Policy: <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.9.pdf> and [camosun.ca/sexual-violence](http://camosun.ca/sexual-violence). To contact the Office of Student Support: [oss@camosun.ca](mailto:oss@camosun.ca) or by phone: 250-370-3046 or 250-3703841

### Student Misconduct (Non-Academic)

Camosun College is committed to building the academic competency of all students, seeks to empower students to become agents of their own learning, and promotes academic belonging for everyone. Camosun also expects that all students to conduct themselves in a manner that contributes to a positive, supportive, and safe learning environment. Please review Camosun College’s Student Misconduct Policy at <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.5.pdf> to understand the College’s expectations of academic integrity and student behavioural conduct.

**Changes to this Syllabus:** Every effort has been made to ensure that information in this syllabus is accurate at the time of publication. The College reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.