

COURSE SYLLABUS



COURSE TITLE: MATH-097: College Preparatory - Mathematics 2

CLASS SECTION: 001

TERM: Summer 2023

COURSE CREDITS: 3

DELIVERY METHOD(S): Face-to-Face

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>

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

NAME: Amanda Malloch

EMAIL: MallochA@camosun.ca

OFFICE: Ewing 262

HOURS: Tuesday and Wednesday 12:30 – 1:30pm, or by appointment

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

Students will build the knowledge and skills in algebra and trigonometry necessary for entry into technical, vocational and career programs that require Math 12 equivalency as a prerequisite and for future study in higher-level math courses at college/university. Students will improve their knowledge of functions and graphs, expanding knowledge of exponential and trigonometric functions to enable analysis of applied problems.

PREREQUISITE(S):

One of:

C in Pre-calculus 11; C in MATH 073; C in MATH 077; C in MATH 137; C in MATH 139

CO-REQUISITE(S):

Not Applicable

EXCLUSION(S):

Not Applicable

COURSE LEARNING OUTCOMES / OBJECTIVES

The learning outcomes in this course meet the required learning outcomes in ABE Mathematics: Provincial Algebra and Trigonometry outlined in the BC ABE Articulation Handbook 2018/19 Edition.

Upon successful completion of this course a student will be able to:

1. Employ advanced graphing techniques for relations and functions, including discontinuous applications. In particular, students will be able to:

- a. Find the distance between two points in the plane and find the midpoint of a segment,
- b. Apply the distance formula and midpoint formula to solve problems,
- c. Recognize graphs of common functions: linear, constant, quadratic, cubic, square root, absolute value, reciprocal,
- d. Use the vertical line test to identify functions,
- e. Graph functions and analyze graphs of functions, identifying: domain and range; intervals on which the function is increasing, decreasing or constant,
- f. Write formulas of functions to model real life applications,
- g. Determine whether a graph is symmetric with respect to the x-axis, y-axis, and the origin,
- h. Identify even or odd functions and recognize their symmetries,
- i. Graph transformations of functions: translations, reflections, stretchings and shrinkings,
- j. Graph functions defined piecewise,
- k. Find the sum, difference, product and quotient of two functions and determine their domains,
- l. Find the composition of two functions f and g , finding formulas for $f(g(x))$ and $g(f(x))$, identifying the domain of the composition and evaluating the composite function,
- m. Given an equation defining a relation, write an equation of the inverse relation,
- n. Given a graph of a relation or function, sketch a graph of its inverse,
- o. Use the horizontal line test to determine if a function is one-to-one and therefore has an inverse that is a function,
- p. Find a formula for the inverse of a function, and
- q. Find $f^{-1}(f(x))$ and $f(f^{-1}(x))$ for an number x in the domains of the functions when the inverse of a function is also a function.

2. Apply the algebraic and visual properties of polynomial and rational functions to modelling of continuous and discontinuous phenomena. In particular, students will be able to:

- a. Graph quadratic functions and analyze graphs of quadratic functions identifying the vertex, line of symmetry, maximum/minimum values, and intercepts,
- b. Solve applied problems involving maximum and minimum function values,
- c. Determine the behavior of the graphs of polynomial functions of higher degree using the leading coefficient test,
- d. Determine whether a function has a real zero between two real numbers,
- e. Recognize characteristics of the graphs of polynomial functions including real zeros, y-intercept, relative maxima and minima, domain and range,
- f. Divide polynomials using long division,
- g. Use synthetic division to divide a polynomial by $x-r$,
- h. Use the remainder and factor theorems to find function values and factors of a polynomial,
- i. List the possible rational zeros for a polynomial function with integer coefficients,

- j. Factor polynomial functions and find the zeros,
- k. Find a polynomial with specified zeros, and
- l. Solve polynomial and rational inequalities.

3. Apply the fundamental algebraic and visual properties of exponential and logarithmic functions to simple examples. In particular, students will be able to:

- a. Evaluate exponential functions including functions with base e ,
- b. Recognize the inverse relationship between exponential and logarithmic functions,
- c. Graph exponential and logarithmic functions including transformations and analyze the graphs in terms of: x - or y - intercepts, asymptotes, increasing or decreasing, domain and range,
- d. Convert between exponential and logarithmic equations
- e. Find common and natural logarithms using a calculator
- f. Use basic and inverse properties of logarithms: $\log_b b = 1$, $\log_b 1 = 0$, $\log_b b^x = x$, $b^{\log_b x} = x$,
- g. Use the product rule, quotient rule and power rule to expand or condense logarithmic expressions,
- h. Use the change of base property to find a logarithm with base other than 10 or e ,
- i. Solve exponential and logarithmic equations, and
- j. Use exponential and logarithmic equations to model and solve real-life applications including exponential growth and decay.

4. Apply the fundamental algebraic and visual properties of trigonometric functions to simple examples of periodic phenomena. In particular, students will be able to:

- a. Identify angles in standard position, positive and negative angles, coterminal angles and reference angles,
- b. Convert between degree and radian measures of angles,
- c. Find the length of an arc, radian measure of central angle, or radius of a circle using the formula $s=r\theta$,
- d. Identify special angles on a unit circle,
- e. Determine the six trigonometric functions of an angle in standard position given a point on its terminal side,
- f. Find the exact values of the trigonometric functions of special acute angles 30° ($\pi/6$), 45° ($\pi/4$), and 60° ($\pi/3$) or any angles that are multiples of these special angles,
- g. Graph the six trigonometric functions and state their properties,
- h. Graph transformations of the sine and cosine functions and determine period, amplitude, and phase shift,
- i. Recognize and use the reciprocal, quotient and Pythagorean identities,
- j. Apply the sum or difference formulas and double angle formulas to find exact values and to verify trigonometric identities,
- k. Recognize and use inverse trigonometric function notation,
- l. Use a calculator to evaluate inverse trigonometric functions,
- m. Find exact values of composite functions with inverse trigonometric functions,
- n. Solve trigonometric equations over the interval $(0, 2\pi)$, and
- o. Use trigonometric functions to model and solve real-life problems.

5. Apply the fundamental algebraic properties of sequences and series to describe geometric growth patterns. In particular, students will be able to:

- a. Find terms of sequences given the general or n th term,
- b. Find a formula for the general or n th term of a given sequence,
- c. Use summation notation to write a series and evaluate a series designated in summation notation,
- d. Construct the terms of a sequence defined by a recursive formula,

- e. Recognize and write terms of arithmetic and geometric sequences,
- f. Use n th term formulas for arithmetic and geometric sequences to find a specified term, or to find n when an n th term is given,
- g. Find the sum of the first n terms of arithmetic and geometric sequences,
- h. Find the sum of an infinite geometric series, if it exists, and
- i. Use sequences and series to model and solve real-life problems.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

Text: Algebra and Trigonometry, Jay Abramson (senior author), OpenStax: Texas. The textbook can be downloaded at this link: <https://openstax.org/details/books/algebra-and-trigonometry>

Other: A Sharp-EL 531 or 510 calculator (any of the models with the *same number* are acceptable). No other calculators or devices are permitted.

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

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

Class times and locations: Monday to Friday 1:30 – 3:20pm in Ewing 348.

MyOpenMath Online Assignments: Every week, a selection of practice problems will be assigned through the free online platform MyOpenMath, due to be completed by Tuesday evening the following week. I have included a link to our MyOpenMath course page and instructions on how to register on our D2L page.

Each assignment question will have five available versions and you can attempt each of them three times. You will also have access to two late passes, each of which will extend the due date for one assignment by 48 hours. Assignments will be available for practice after the due dates, but no credit will be given after the due date (unless you use one of your two late passes).

Content: We will cover Chapters 1, 2, 3, 5, 6, 7, 8, 9, and 13 of the textbook (excluding sections 2.4 and 9.4)

Tests: There will be three term tests, each with a writing time of one hour. The tests will each occur in the first hour of our class (1:30-2:30pm) followed by a 15-minute break and then class will resume at 2:45pm.

The coverage for each test will be announced in class during the previous week and posted on D2L.

WEEK or DATE RANGE	ACTIVITY or TOPIC
July 11 th	Assignment 1 Due
July 18 th	Assignment 2 Due
July 19 th	Test 1
July 25 th	Assignment 3 Due
August 1 st	Assignment 4 Due
August 2 nd	Test 2
August 8 th	Assignment 5 Due
August 15 th	Assignment 6 Due
August 16 th	Test 3
August 22 nd	Assignment 7 Due
August 24 th	Final Exam

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

DESCRIPTION	WEIGHTING
MyOpenMath Online Assignments (weekly)	12%
Test 1 – Wednesday, July 19 th	16%
Test 2 – Wednesday, August 2 nd	16%
Test 3 – Wednesday, August 16 th	16%
Final Exam – Thursday, August 24 th	40%
TOTAL	100%

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

Your success in this course will depend heavily on your commitment to regularly working on practice problems. Keep in mind that this is an accelerated course, so you will need to spend double the amount of practice/study time outside of class than you normally would. Ideally, you should expect to spend two hours each day working on practice problems.

Being able to “do math” is a skill, and like any skill, it needs regular practice to flourish. As the gap between a student’s practice sessions increases, the amount of practice time needed to make progress will also increase. For maximum efficiency with your learning, you should aim to practice, even just a little bit, every day. Also, because of the speed of this class and the fact the material builds on itself, falling behind in the material is very difficult to recover from.

Students are expected to write all tests and exams in-person on the scheduled day and time. *No make-up tests/exams will be offered.* If an illness or unavoidable personal emergency prevents a student from attending a test, the student must let the instructor know prior to the test and the students’ score will be determined using the relevant portion of the final exam.

SCHOOL OR DEPARTMENTAL INFORMATION

Math Lab (Help Centre):

The Math Labs are staffed with instructional assistants available for free help. Hours of operation and other details (including how to book an online appointment) can be found using:

<https://camosun.ca/services/academic-supports/help-centres/math-help>

STUDENT RESPONSIBILITY

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

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/>.

Academic Advising

<http://camosun.ca/advising>

Accessible Learning

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

Counselling

<http://camosun.ca/counselling>

Career Services

<http://camosun.ca/coop>

Financial Aid and Awards	http://camosun.ca/financialaid
Help Centres (Math/English/Science)	http://camosun.ca/help-centres
Indigenous Student Support	http://camosun.ca/indigenous
International Student Support	http://camosun.ca/international/
Learning Skills	http://camosun.ca/learningskills
Library	http://camosun.ca/services/library/
Office of Student Support	http://camosun.ca/oss
Ombudsperson	http://camosun.ca/ombuds
Registration	http://camosun.ca/registration
Technology Support	http://camosun.ca/its
Writing Centre	http://camosun.ca/writing-centre

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.

COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

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. To contact the Office of Student Support: 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.

IMPORTANT DATES

- Tuesday, July 4th – First day of classes.
- Sunday, July 9th – Last day to add courses.
- Monday, August 7th – B.C. Day (no classes).
- Friday, August 18th – Last day of class.
- Monday, August 21st – Last day to drop without academic penalty.
- Thursday, August 24th – 1:30 to 4:30pm – Final Exam.

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.