

- 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.

3. Required Materials

(a) *Algebra and Trigonometry*, Jay Abramson (senior author), OpenStax: Texas. The link to this free textbook can be found on the D2L page.

(b) Sharp EL-531 calculator (or Sharp EL-510R). No other calculator may be used during tests/exams.

4. Course Content and Schedule

Schedule: See the pacing schedule on D2L.

Assignments:

There will be a total of nine assignment to be submitted for marking. The due dates for the assignments are listed on the pacing schedule. Each assignment will be due to be submitted no later than the end of class on the due date. Because I will be posting the solutions immediately after class, I will not be able to accept late assignments.

Of the nine assignments, the lowest two assignment marks will be dropped when calculating your grade in the course.

Tests: There will be three tests for this course (January 28, March 3, March 31). Each of these tests will be written in class, and will have a duration of 90 minutes. Some formulas will be provided on some tests, but otherwise you will not be permitted the use of a formula sheet. The coverage for these tests will be announced in class, and posted on D2L the week before the test.

Final Exam: A comprehensive, 3-hour final exam will take place during the final exam period of April 14-22. The specific date, time, and location will be announced on or about March 9. You must write the final exam at the scheduled time as per Camosun College's policy on final examinations. See camosun.ca/learn/calendar/current/procedures.html#academic.

Test Absences: If you miss a test or the trig proofs quiz for a legitimate reason such as illness, accident or family affliction, you should notify me as soon as possible and provide supporting documentation. There will be no “make-up” tests. In the event of an excused absence for a test, the mark from the relevant portions of the final exam, will replace your test mark. If you miss a test and are not excused, then a mark of zero will be given for that test or quiz. If you miss the trig proofs quiz, we will attempt to schedule a rewrite as soon as possible. If a rewrite is not possible, I will excuse your absence, and shift the weight to the final exam.

Attendance and "Extra Credit": In each lecture (excluding test days), I will be taking attendance. There are no attendance marks or participation marks for this course. If you miss more than half of a lecture, then you will be marked absent for that lecture.

For every 14 classes that you attend, you will receive a token that will be visible in the grade book on D2L. If a student attends every lecture, then they will receive the maximum of four tokens over the term.

A token may be exchanged for the ability to rewrite a test question that you did poorly on.
To use a token:

- Make an appointment with me, and bring your test with you, so that you can show me which question you would like to try again.
- I will print out a fresh copy of the question, and you will try the question again. It will be identical to the question on the test; since you would have studied the test solutions, solving the question should not take long.
- I will mark your work, then make the appropriate adjustments to your test mark.

All unused tokens will expire on the day of the final exam. Using tokens to rewrite test questions is the only form of "extra credit" that I offer for this course.

5. Basis of Student Assessment (Weighting)

Assignments:	14% (2% for each of the 7 assignments, after the lowest 2 are dropped).
Term Tests:	36% (11% for each of the 3 term tests)
Final Exam:	50%

6. Grading System

Standard Grading System (GPA)

Competency Based Grading System

7. Recommended Materials to Assist Students to Succeed Throughout the Course

A&S Math Lab (Ewing 224/342):

This drop-in centre is freely available for your use to work on math homework and to seek help from the instructional assistant. Hours are posted on the door or online at camosun.ca/services/help-centres/#MATH.

Estimated out-of-class hours:

To be successful in this course, you should expect to spend about **10 hours per week** studying and doing the suggested problems.

8. College Supports, Services and Policies



Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ <http://camosun.ca/about/mental-health/emergency.html> or <http://camosun.ca/services/sexual-violence/get-support.html#urgent>

College Services

Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at <http://camosun.ca/>

College Policies

Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at <http://camosun.ca/about/policies/>. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

A. GRADING SYSTEMS <http://camosun.ca/about/policies/index.html>

The following two grading systems are used at Camosun College:

1. Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at <http://camosun.ca/about/policies/index.html> for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	<i>In progress:</i> A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.