



COURSE OUTLINE

The course description is online @ <http://camosun.ca/learn/calendar/current/web/math.html>

Ω **Please note:** the College electronically stores this outline for five (5) years only.
It is **strongly recommended** you keep a copy of this outline with your academic records.
You will need this outline for any future application/s for transfer credit/s to other colleges/universities.

1. Instructor Information

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|-----|---------------|---|--------------------|--|
| (a) | Instructor: | Bogdan Verjinschi | | |
| (b) | Office Hours: | TBA | | |
| (c) | Location: | E 244 | | |
| (d) | Phone: | 250-370-3494 | Alternative Phone: | |
| (e) | Email: | verjinschi@camosun.bc.ca | | |
| (f) | Website: | http://verjinschi.disted.camosun.bc.ca/ | | |

2. Intended Learning Outcomes

Upon completion of this course the student will be able to:

1. Read and write mathematics at a level sufficient for entry into applied calculus.
2. Factor polynomials. Simplify rational expressions, complex fractions and radicals. Factor and simplify expressions containing rational exponents.
3. Choose efficient strategies to solve quadratic equations. Solve radical equations and equations involving rational expressions.
4. State the formulas for the slope y-intercept and point slope form of lines and use the formulas to find equations of lines. Graph linear equations and find equations from graphs. Model real-life problems with linear equations.
5. Write the equations of circles and ellipses in standard form and graph these relations.
6. Define the term function. Determine if relations are functions. Find the domains of functions. Define even and odd functions and test functions to determine if they are even, odd or neither. Form and simplify difference quotients and explain their graphical interpretation and significance.
7. Identify the graphs of common algebraic functions. Evaluate and graph piecewise defined functions.
8. Construct algebraic functions to model simple real-life problems.
9. Translate verbal descriptions of transformations to function notation and vice versa. Interpret and graph multiple transformations of functions.
10. Analyze and graph quadratic functions. Solve optimization problems modelled with quadratic functions.
11. Graph polynomial functions using symmetry, end behaviour and behaviour near their x-intercepts. Analyze graphs of polynomial functions and construct possible equations.
12. Determine the domain, intercepts and the equations of horizontal and vertical asymptotes for rational functions.
13. Solve polynomial and rational inequalities.
14. State the Remainder, Factor and Rational Zeros Theorems and use these theorems to factor polynomials and find the real zeros.
15. Compose and decompose functions. Verify that two functions are inverses using the definition of inverse functions. Find inverse functions algebraically and graphically.
16. Explain the relationship between exponential and logarithmic functions. Graph exponential and logarithmic functions and their transformations.
17. Use the properties of logarithms to simplify expressions and solve equations.
18. Solve applied problems involving pH, the Richter scale, decibels, compound interest, exponential growth, exponential decay and logistic growth.
19. Convert between degree and radian measure.
20. Sketch graphs of the sine and cosine functions using their unit circle definitions. Graph transformations of these functions.

21. Define the tangent, cotangent, secant and cosecant functions in terms of the sine and cosine functions. Graph the tangent, cotangent, secant and cosecant functions using the sine and cosine graphs.
22. State the right triangle definitions for the trigonometric functions. Use reference triangles to find exact values of trigonometric functions.
23. Derive the Pythagorean identities and the double angle identities. Use the Pythagorean identities, the sum and difference identities and the double angle identities to simplify expressions and verify other identities.
24. Find exact values for compositions of trigonometric and inverse trigonometric functions.
25. Find exact and approximate solutions of basic trigonometric equations.
26. Identify patterns in sequences and write formulas for the general terms. Write the terms of recursively defined sequences. Express sums using summation notation.
27. Identify arithmetic and geometric sequences and derive formulas for their n th terms. Find the sums of the first n terms of these sequences. Solve word problems involving arithmetic and geometric sequences and series.

3. Required Materials

(a) Texts *Algebra and Trigonometry*, Sullivan, 2nd custom edition

(b) **CALCULATOR:**

As per Math Department policy, the only calculator permitted for use on the tests and the final exam is the **Sharp EL-531X** (or the discontinued EL-531W) scientific calculator. No other make/model of calculator is permitted, nor are other electronic devices such as cell phones, iPods, electronic translators, etc.

4. Course Content and Schedule

(This section can include: class hours, lab hours, out of class requirements and/or dates for quizzes, exams, lectures, labs, seminars, practicums, etc.)

SECTIONS

1. Review, Equations, Graphs

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|-----------------------------------|-------------------------|
| • Are you ready for Pre-Calculus? | Package (Dept. Website) |
| • Algebra Review | R.5, R.6, R.7, R.8, |
| • Equations, Inequalities | 1.1, 1.2, 1.4, 1.5 |
| • Graphs of Equations | 2.1 → 2.4 |
| • Conics | 11.1→11.4 |

2. Functions

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|--------------------------------------|-----------|
| • Properties of Functions | 3.1 → 3.3 |
| • Graphing - transformations | 3.4 → 3.6 |
| • Linear & Quadratic Functions | 4.1 → 4.4 |
| • Quadratic Inequalities | 4.5 |
| • Polynomial & Rational Functions | 5.1 → 5.3 |
| • Polynomial & Rational Inequalities | 5.4 |
| • Factor/Remainder Theorem | 5.5 |

3. Exponential & Logarithmic Functions

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|--------------------------------------|-----------|
| • Composite & Inverse Functions | 6.1, 6.2 |
| • Logarithmic, Exponential Functions | 6.3 → 6.5 |
| • Equations & Applications | 6.6 → 6.8 |

4. Trigonometry – Part 1

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|-------------------------------|-----------|
| • Radians, basic trigonometry | 7.1 → 7.3 |
| • Trig functions of any angle | 7.4, 7.5 |
| • Graphs of trig functions | 7.6 → 7.8 |
| • Inverse Trig Functions | 8.1, 8.2 |

5. Trig – Part 2, Sequences, Series, Intro to Calculus

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|---------------------------|-------------|
| • Basic Trig Identities | 8.3 |
| • Further Trig Identities | 8.4 → 8.5 |
| • Trigonometric Equations | 8.6, 8.7 |
| • Sequences & Series | 13.1 → 13.3 |

5. Basis of Student Assessment (Weighting)

(a) 4 Assignments: 10% (dates TBA)

(b) 4 Tests: 40%

Tentative dates: Test 1: Jan 27 Test 2: Feb 17 Test 3: March 10 Test 4: March 31

If you must miss one test due to illness or family affliction contact me via e-mail **before** the test to make alternate arrangements.

If you don't do not provide a reason for a missed test you may get a zero on that test.

(c) Exams 50%

The final exam will cover the entire course and will be 3 hours long and will take place during the final exam period of April 13-21.

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/pdf/academic-policies.pdf.

Students **MUST** be available to write the final exam at the scheduled time.

*As stated in the current college calendar "students are expected to write tests and final examinations at the scheduled time and place." **Exceptions will only be considered due to emergency circumstances as outlined in the calendar.** Holidays or scheduled flights are not considered to be emergencies.*

| | | |
|-------------------------|-----------|--------------------------|
| Important Dates: | January 5 | First day of class |
| | Feb 4 | Fee deadline |
| | Feb 9 | Family Day (no class) |
| | Feb 12-13 | Reading Break (no class) |
| | Feb 23 | Withdrawal deadline |
| | Apr 3 | Good Friday (no class) |
| | Apr 6 | Easter Monday (no class) |
| | Apr 10 | Last Day of class |
| | Apr 13-21 | Final exam period |

6. Grading System

(No changes are to be made to this section unless the Approved Course Description has been forwarded through the Education Council of Camosun College for approval.)

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 | Minimum level of achievement for which credit is granted; a course with a "D" grade cannot be used as a prerequisite. | 1 |
| 0-49 | F | Minimum level has not been achieved. | 0 |

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 E-1.5 at camosun.ca 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, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. <i>(For these courses a final grade will be assigned to either the 3rd course attempt or at the point of course completion.)</i> |

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|-----------|---|
| 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. |
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7. Recommended Materials or Services to Assist Students to Succeed Throughout the Course

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College calendar, at Student Services, or the College web site at camosun.ca.

STUDENT CONDUCT POLICY

There is a Student Conduct Policy **which includes plagiarism**. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, at Student Services, and the College web site in the Policy Section.