



## Mathematics 101 Calculus 2 Winter, 2017

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**Website:** D2L

**Important Dates:**

January 9	First day of class
January 23	Fee deadline
February 13	Family Day (no class)
February 14-17	Reading Break (no class)
March 13	Withdrawal deadline
April 13	Last day of class
April 14	Good Friday (no class)
April 17	Easter Monday (no class)
April 18-26	Final exam period

**Calendar Description:** A continuation of MATH 100. Topics include: inverse and hyperbolic trigonometric functions, applications of integration, integration techniques, L'Hôpital's Rule, improper integrals, infinite series, Taylor series, parametric equations and polar coordinates. [4 Credits]

(Source: *Camosun College 2015-2016 Calendar*  
[camosun.ca/learn/calendar/current/web/math.html](http://camosun.ca/learn/calendar/current/web/math.html))

**Prerequisites:** C in MATH 100 or A in MATH 108.

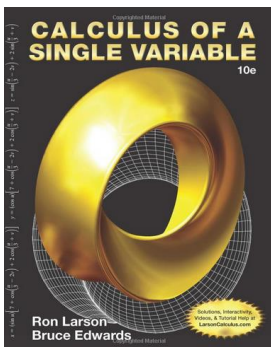
**Exit Grade:** A grade of at least C (60%) is required when this course is used as a prerequisite for entry into MATH 220, MATH 226, or any other Camosun course.

**Required Textbook:** Ron Larson and Bruce H. Edwards, *Calculus of a Single Variable*, 10th Edition, Brooks/Cole, 2014.

### Course Content:

#### Chapters and Sections

5. Logarithmic, Exponential, and Other Transcendental Functions
  - 5.6 Inverse Trigonometric Functions: Differentiation
  - 5.7 Inverse Trigonometric Functions: Integration
  - 5.8 Hyperbolic Functions
7. Applications of Integration
  - 7.1 Area of a Region Between Two Curves
  - 7.2 Volume: The Disk Method
  - 7.3 Volume: The Shell Method
  - 7.4 Arc Length and Surfaces of Revolution
  - 7.5 Work
  - 7.6 Moments, Centers of Mass, and Centroids
  - 7.7 Fluid Pressure and Fluid Force
8. Integration Techniques, L'Hôpital's Rule, and Improper Integrals
  - 8.1 Basic Integration Rules
  - 8.2 Integration by Parts
  - 8.3 Trigonometric Integrals
  - 8.4 Trigonometric Substitution
  - 8.5 Partial Fractions



- 8.6 Integration by Tables and Other Integration Techniques
- 8.7 Indeterminate Forms and L'Hôpital's Rule
- 8.8 Improper Integrals
- 9. Infinite Series
  - 9.1 Sequences
  - 9.2 Series and Convergence
  - 9.3 The Integral Test and  $p$ -Series
  - 9.4 Comparisons of Series
  - 9.5 Alternating Series
  - 9.6 The Ratio and Root Tests
  - 9.7 Taylor Polynomials and Approximations
  - 9.8 Power Series
  - 9.9 Representation of Functions by Power Series
  - 9.10 Taylor and Maclaurin Series
- 10. Conics, Parametric Equations, and Polar Coordinates
  - 10.1 Conics and Calculus
  - 10.2 Plane Curves and Parametric Equations
  - 10.3 Parametric Equations and Calculus
  - 10.4 Polar Coordinates and Polar Graphs
  - 10.5 Area and Arc Length in Polar Coordinates

**Learning Outcomes:**

The Intended Learning Outcomes for this course, as approved by the Education Council, are as follows. Upon completion of this course the student will be able to:

1. Differentiate and integrate inverse trigonometric, hyperbolic and inverse hyperbolic functions.
2. Use integration to find area, volume, arc length, surface area of revolution, work, moments and centroids.
3. Integrate using parts, trigonometric integrals, trigonometric substitution, partial fractions and tables.
4. Evaluate limits, which have indeterminate forms, and calculate improper integrals.
5. Test a sequence for convergence and explain the difference between convergence of a sequence and convergence of a series.
6. Test series for convergence using the integral test, p-test, comparison tests, alternating series test and ratio test and explain the difference between convergence and absolute convergence.
7. Estimate the error in approximating a series using improper integrals and the alternating series remainder.
8. Calculate Taylor polynomials, power series, Taylor series, and MacLaurin series and estimate the error in an approximation using Taylor's Theorem.
9. Determine the interval of convergence of a power series.
10. Graph and analyze parametric curves and find arc length and surface area in parametric form.
11. Graph and analyze curves given in polar coordinates and determine area and arc length in polar form.

**A&S Math Lab:**

Ewing 224: This drop-in centre is freely available for your use to work on math homework and to seek help from the tutor on staff (see hours posted on door).

**Support and Services:**

There are a variety of learning support and services available that can assist you throughout your learning. For more information please see [camosun.ca/services](http://camosun.ca/services).

**Academic Integrity:**

The Department of Mathematics and Statistics has prepared a red handout called [Student Guidelines for Academic Integrity](#) to help you interpret college policies involving student conduct, academic dishonesty, plagiarism, etc. It is your responsibility to become familiar with the contents of the document and the college policies it references.

**Calculator Policy:**

As per department policy, the only calculator permitted for use on tests and the final exam is the Sharp EL-531 (or EL-510R) scientific calculator. No other calculator, nor any other electronic device including cell phones, electronic translators, iPods, etc., is allowed.

**Homework:** There will be periodic assignments to be handed in for marking, details for which will be posted on the course website. LATE ASSIGNMENTS WILL NOT BE ACCEPTED.

**Final Exam:** A comprehensive, 3-hour final exam will take place during the final exam. The specific date, time, and location should be announced in February. 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](http://camosun.ca/learn/calendar/current/procedures.html#academic).

**Grade Calculation:** The final grade will be calculated according to the following breakdown:

Assignments: 15%  
Term Tests: 35%  
Final Exam: 50%

**Grade Scale:** Final letter grades are assigned as follow:

0-49	50-59	60-64	65-69	70-72	73-76	77-79	80-84	85-89	90-100
F	D	C	C+	B-	B	B+	A-	A	A+

For information on Camosun College's grading policy, see policy E-1.5 on the webpage [camosun.ca/about/policies/policies.html#education](http://camosun.ca/about/policies/policies.html#education).