



## Mathematics 101 Calculus 2 Winter, 2018

**Instructor:** George Ballinger  
**Office:** Ewing 256  
**E-mail:** [ballinger@camosun.bc.ca](mailto:ballinger@camosun.bc.ca)  
**Website:** [georgeballinger.ca](http://georgeballinger.ca) (click the [MATH 101](#) link for course information)  
**Telephone:** 250-370-3116  
**Timetable:**

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 am - 9:20 am					
9:30 am - 10:20 am	MATH 101-002 Room Y217	MATH 101-002 Room Y217	MATH 101-002 Room Y217	MATH 101-002 Room Y217	MATH 101-002 Room Y217
10:30 am - 11:20 am	MATH 101-003 Room Y217	MATH 101-003 Room Y217	MATH 101-003 Room Y217	MATH 101-003 Room Y217	MATH 101-003 Room Y217
11:30 am - 12:20 pm	Office Hour E256	Office Hour E256	Office Hour E256	Office Hour E256	Office Hour E256
12:30 pm - 1:20 pm					
1:30 pm - 2:20 pm					
2:30 pm - 3:20 pm	MATH 126-001 Room Y227	MATH 126-001 Room Y219	MATH 126-001 Room Y219	MATH 126-001 Room Y219	
3:30 pm - 4:20 pm		A&S Chairs Meeting			
4:30 pm - 5:20 pm					

<b>Important Dates:</b>	January 8	First day of class
	January 22	Fee deadline
	February 12	Family Day (no class)
	February 13-16	Reading Break (no class)
	March 14	Withdrawal deadline
	March 30	Good Friday (no class)
	April 2	Easter Monday (no class)
	April 13	Last day of class
	April 16-21, 23-24	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. ~~Students will complete some assignments using Maple.~~ [4 Credits]

(Source: Camosun College Calendar  
[camosun.ca/learn/calendar/current/web/math.html#MATH101](http://camosun.ca/learn/calendar/current/web/math.html#MATH101))

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

**Exit Grade:**

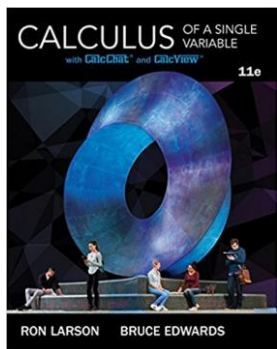
A grade of at least C (60%) is required when this course is used as a prerequisite for entry into MATH 220, MATH 226 or any other Camosun course.

**Textbook:**

Ron Larson and Bruce Edwards, *Calculus of a Single Variable*, 11th Edition, Brooks/Cole, 2018.

**Course Content:****Chapters and Sections**

5. Logarithmic, Exponential, and Other Transcendental Functions
  - 5.6 Indeterminate Forms and L'Hôpital's Rule
  - 5.7 Inverse Trigonometric Functions: Differentiation
  - 5.8 Inverse Trigonometric Functions: Integration
  - 5.9 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 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
  - 8.7 Integration by Tables and Other Integration Techniques
  - 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



<b>Learning Outcomes:</b>	<p>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:</p> <ol style="list-style-type: none"> <li>1. Differentiate and integrate inverse trigonometric, hyperbolic and inverse hyperbolic functions.</li> <li>2. Use integration to find area, volume, arc length, surface area of revolution, work, moments and centroids.</li> <li>3. Integrate using parts, trigonometric integrals, trigonometric substitution, partial fractions and tables.</li> <li>4. Evaluate limits, which have indeterminate forms, and calculate improper integrals.</li> <li>5. Test a sequence for convergence and explain the difference between convergence of a sequence and convergence of a series.</li> <li>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.</li> <li>7. Estimate the error in approximating a series using improper integrals and the alternating series remainder.</li> <li>8. Calculate Taylor polynomials, power series, Taylor series, and MacLaurin series and estimate the error in an approximation using Taylor's Theorem.</li> <li>9. Determine the interval of convergence of a power series.</li> <li>10. Graph and analyze parametric curves and find arc length and surface area in parametric form.</li> <li>11. Graph and analyze curves given in polar coordinates and determine area and arc length in polar form.</li> </ol>
<b>A&amp;S Math Lab:</b>	Ewing 224: This drop-in centre is freely available for your use to work on math homework and to seek help from the instructional assistant (see hours posted on door or online at <a href="http://camosun.ca/services/help-centres/#MATH">camosun.ca/services/help-centres/#MATH</a> ).
<b>Support and Services:</b>	There are a variety of services available that can assist you throughout your learning. For more information please see <a href="http://camosun.ca/services">camosun.ca/services</a> .
<b>Academic Integrity:</b>	The Department of Mathematics and Statistics has prepared a handout called <a href="#">Student Guidelines for Academic Integrity</a> 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.
<b>Calculator Policy:</b>	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 or any other electronic device including cell phones, electronic translators, smartwatches, iPods, etc. is allowed.
<b>Homework:</b>	There will be periodic assignments to be handed in for marking. Collaboration with your classmates is permitted, but you must submit your own work. LATE ASSIGNMENTS WILL NOT BE ACCEPTED.
<b>Tests:</b>	If you miss a test 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, the mark from your final exam or relevant subset thereof will replace your test mark.
<b>Final Exam:</b>	A comprehensive, 3-hour final exam will take place during the final exam period of April 16-21, 23-24. The specific date, time, and location will be announced on or about February 23. You must write the final exam at the scheduled time as per Camosun College's policy on final examinations. See <a href="http://camosun.ca/learn/calendar/current/procedures.html#academic">camosun.ca/learn/calendar/current/procedures.html#academic</a> .

**Grade Calculation:**

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

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

\* *Note:* The lowest assignment mark will be dropped when calculating the assignment average. This allows you to miss one assignment without penalty.

**Grade Scale:**

Final letter grades are assigned as follows:

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

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).