



Mathematics 101 Calculus 2 Winter, 2023

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Timetable:

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 am - 9:20 am					
9:30 am - 10:20 am	MATH 101-003 Room Y219				
10:30 am - 11:20 am					
11:30 am - 12:20 pm	Office Hour E260				Office Hour E260
12:30 pm - 1:20 pm	MATH 251-X03 Room Y219		MATH 251-X03 Room Y219		MATH 251-X03 Room Y219
1:30 pm - 2:20 pm		MATH 101-003 Room Y219	Office Hour E260	MATH 101-003 Room Y219	MATH 101-003 Room Y219
2:30 pm - 3:20 pm		MATH 251-X03 Room Y219		MATH 251-X03 Room Y219	
3:30 pm - 4:20 pm			MATH 101-003 Room Y219		
4:30 pm - 4:50 pm					
5:00 pm - 5:50 pm		Office Hour E260		Office Hour E260	
6:00 pm - 6:50 pm		MATH 101-002 Room Y217	MATH 101-002 Room Y217	MATH 101-002 Room Y217	
7:00 pm - 7:50 pm					

Important Dates:	January 9	First day of class
	January 15	Add Course deadline
	January 15	Drop Course with 80% Tuition Refund deadline
	January 23	Deferred Tuition & Fee Payment deadline
	February 20	Family Day (no class)
	February 21-24	Reading Break (no class)
	April 7	Good Friday (no class)
	April 10	Easter Monday (no class)
	April 14	Last day of class
	April 15	Withdrawal deadline
	April 17-25	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.~~ [3 Credits]

(Source: Camosun College Calendar
calendar.camosun.ca/preview_course_nopop.php?catoid=11&coid=19149)

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

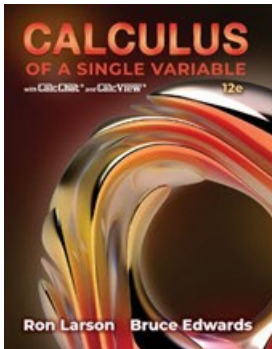
Exit Grade: A grade of at least C (60%) is required when this course is used as a prerequisite for entry into MATH 220, MATH 226 or any other Camosun course.

Textbook: Ron Larson and Bruce Edwards, *Calculus of a Single Variable*, 12th Edition, Cengage Learning, 2023.

Course Content:

Chapters and Sections

5. Logarithmic, Exponential, and Other Transcendental Functions
 - 5.6 Indeterminate Forms and L'Hôpital's Rule (*covered after sec 8.7*)
 - 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



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 instructional assistant. Hours are posted on the door or online at camosun.ca/services/academic-supports/help-centres/math-help.

Academic Integrity:

The Department of Mathematics and Statistics has prepared a 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 or any other electronic device including cell phones, smartwatches, etc. is allowed.

Homework:

There will be periodic assignments (7 all together) to be completed on the worksheets provided and handed in for marking. While collaboration with your classmates is permitted, you must submit your *own* work and ensure you don't let collaboration turn into plagiarism. You may not post assignment questions to, or copy solutions from, "cheat" websites such as Chegg.

Due dates for assignments will be posted on the course webpage, and assignments are due before the end of class on the due dates. Solutions will be posted soon after assignments are collected. As such, *late assignments will not be accepted under any circumstances*. To accommodate situations where a student is unable to submit his or her assignment on time (e.g. due to illness), the lowest assignment mark will be dropped when computing the assignment average.

Tests:

Three term tests are tentatively scheduled for the following dates:

- Test 1 on Wednesday, February 8
Sec 5.7-5.9 and 7.1-7.5
- Test 2 on Wednesday, March 8
Sec 7.6-7.7, 8.1-8.5, 8.7-8.8 and 5.6
- Test 3 on Wednesday, April 5
Sec 9.1-9.10

If you miss a test for a legitimate reason such as illness, accident or family affliction, you should notify me (by email, phone/voicemail, or in person) *as soon as possible* and *before* the test (unless circumstances reasonably prevent you from doing so) and be prepared to provide supporting documentation upon your return. There will be no "make-up" tests, but instead, in the event of an excused absence, the mark from your final exam, or relevant subset thereof, will replace your test mark.

Final Exam:

A comprehensive, 3-hour final exam will take place during the final exam period of April 17-25. The specific date, time, and location will be announced on or about February 17. You must write the final exam at the scheduled time as per Camosun College's policy on final examinations. See camosun.ca/registration-records/policies-and-procedures-students/academic-policies-and-procedures-students.

Grade Calculation:

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

7 Assignments: 15%*
3 Term Tests: 45%
Final Exam: 40%

* The lowest assignment mark will be dropped when calculating the assignment average. This allows you to miss one assignment for any reason, including illness, without penalty. *Late assignments will not be accepted.*

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
F	D	C	C+	B-	B	B+	A-	A	A+

For information on Camosun College's grading policy, see policy E-1.5 online at camosun.ca/about/camosun-college-policies-and-directives/education/academic.