



MATH-100-003
Calculus 2
Winter 2018

COURSE OUTLINE

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

Ω Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

1. Instructor Information

(a) Instructor	George Ballinger	
(b) Office hours	See below	
(c) Location	E256	
(d) Phone	250-370-3116	Alternative: _____
(e) E-mail	ballinger@camosun.bc.ca	
(f) Website	georgeballinger.ca	

2. Intended Learning Outcomes

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.

3. Required Materials

- (a) Texts

SEE BELOW

(b) Other

4. Course Content and Schedule

(Can include: Class hours, Lab hours, Out of Class Requirements and/or Dates for quizzes, exams, lecture, labs, seminars, practicums, etc.)

SEE BELOW

5. Basis of Student Assessment (Weighting)

(Should be directly linked to learning outcomes.)

(a) Assignments

(b) Quizzes

(c) Exams

(d) Other (e.g. Project, Attendance, Group Work)

SEE BELOW

6. Grading System

(If any changes are made to this part, then the Approved Course description must also be changed and sent through the approval process.)

(Mark with "X" in box below to show appropriate approved grading system – see last page of this template.)

Standard Grading System (GPA)

Competency Based Grading System

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

SEE BELOW

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.



Mathematics 101 Calculus 2 Winter, 2018

Instructor: George Ballinger
Office: Ewing 256
E-mail: ballinger@camosun.bc.ca
Website: 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					

Important Dates:	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)

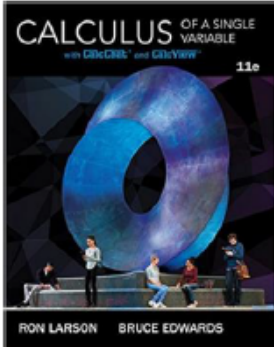
Prerequisites: C in MATH 100 or A in MATH 108.

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

Learning Outcomes:	<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"> 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 (see hours posted on door or online at camosun.ca/services/help-centres/#MATH).
Support and Services:	There are a variety of services available that can assist you throughout your learning. For more information please see camosun.ca/services .
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, electronic translators, smartwatches, iPods, etc. is allowed.
Homework:	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.
Tests:	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.
Final Exam:	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 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%

* *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
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.