	School of Arts & Science	
	MATHEMATICS DEPARTMENT	
	MATH 108 - 003	
	Applied Calculus	
	2010W	

COURSE OUTLINE

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

(a)	Instructor:	Alan Meichsner	
(b)	Office Hours:	Monday-Friday 11:30-12:20am	
(c)	Location:	Ewing 250	
(d)	Phone:	250-370-3321	Alternative Phone:
(e)	Email:	meichsnera@camosun.ca	

2. Intended Learning Outcomes

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

1. Find the limit of elementary functions as the independent variable approaches some finite value or approaches infinity.
2. Find the derivative of simple functions using the definition of the derivative.
3. Find the derivative of functions (polynomial, trigonometric, logarithmic and exponential functions) using the product, quotient and chain rule.
4. Find the derivative using implicit differentiation.
5. Solve problems involving rates of change.
6. Find relative and absolute extrema of functions.
7. Sketch graphs of functions identifying such features as relative extrema, intervals where the function is increasing and decreasing, points of inflection, intervals where the function is concave up and concave down, and asymptotes.
8. Solve problems that involve maximizing or minimizing some variable associated with the problem.
9. Find the approximate area under a curve using the area of a set of approximating rectangles.
10. Evaluate a definite and an indefinite integral of polynomial, trigonometric, logarithmic and exponential functions using the Fundamental theorem of Calculus.
11. Evaluate integrals using the method of substitution.
12. Use integration to find the area between two curves.
13. Evaluate a definite and indefinite integral by the method of integration by parts.
14. Solve elementary differential equations using the method of separation of variables.
15. Solve problems using differential and integral calculus that involve applications from business and/or biological sciences.

3. Required Materials

Textbook: Calculus with Applications by Lial, Greenwell, and Ritchey.
Seventh, Eighth, or Ninth Edition.

4. Course Content and Schedule

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CHAPTER 1: LINEAR FUNCTIONS

   #    Text    Time
   1    1.1      1     Slopes and Equations of Lines
   2    1.2      2     Linear Functions and Applications


CHAPTER 2: NONLINEAR FUNCTIONS

   #    Text    Time
   3    2.1      1     Properties of Functions
   4    2.2      3     Quadratic Functions; Translation and Reflection
   5    2.3      2     Polynomial and Rational Functions


CHAPTER 3: THE DERIVATIVE

   #    Text    Time
   6    3.1,3.2  1     Limits and Continuity
   7    3.3      1     Rates of Change
   8    3.4      1     Definition of the Derivative
   9    3.5      1     Graphical Differentiation


CHAPTER 4: CALCULATING THE DERIVATIVE

   #    Text    Time
  10    4.1      2     Techniques for Finding Derivatives
  11    4.2      1     Derivatives of Products and Quotients
  12    4.3      1     The Chain Rule
                 1        TEST 1, Lessons 1 to 12
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CHAPTER 5: GRAPHS AND THE DERIVATIVE

   #    Text    Time
  13    5.1      1     Increasing and Decreasing Functions
  14    5.2      1     Relative Extrema
  15    5.3      2     Higher Derivatives; Concavity; The Second
                       Derivative Test
  16    5.4      2     Asymptotes and Curve Sketching


CHAPTER 6+12: APPLICATIONS OF THE DERIVATIVE

   #    Text    Time
  17    6.1      1     Absolute Extrema



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   #    Text    Time
  18    6.2      2     Applications of Extrema
  19    6.3      1     A Further Applications from Business: Economic
                       Lot Size
  20    6.4      1     Implicit Differentiation
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21   6.5      2    Related Rates
22   12.6     1    Newton's Method for Solving Equations
23   6.6      1    Differentials: Linear Approximation
              1        TEST 2, Lessons 13 to 22
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EXPONENTIAL AND LOGARITHMIC FUNCTIONS

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 #     Text    Time
24    2.4      1    Exponential Functions
25    2.5      2    Logarithmic Functions
26    2.6      2    Applications: Growth and Decay; Finance
27    4.4     .5    Derivatives of Exponential Functions
28    4.5     .5    Derivatives of Logarithmic Functions
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CHAPTER 7: INTEGRATION

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 #     Text    Time
29    7.1      1    Antiderivatives
30    7.2      1    Integration by Substitution
31    Notes    1    Area
32    7.4     1.5   The Fundamental Theorem of Calculus
33    7.5     1.5   The Area Between Two Curves
              1        TEST 3, Lessons 23 to 32
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MORE INTEGRATION

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 #     Text    Time
34    8.1      2    Integration by Parts; Tables of Integrals
35    10.1     1    Solutions of Elementary and Separable
Differential Equations
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CHAPTER 13: THE TRIGONOMETRIC FUNCTIONS

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 #     Text    Time
36    13.1     2    Definitions of the Trigonometric Functions
37   13.2-13.3 2    Calculus with Trigonometric Functions
              1        TEST 4, Lessons 33 to 36
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5. Basis of Student Assessment (Weighting)

(a)	Other (eg, Attendance, Project, Group Work)	See below
(b)	Assignments	See below
(c)	Term tests	50%. Will throw out worse test if class participation and assignments are satisfactory
(d)	Final exam	50% or 100% if higher than term mark

1. TERM MARK. You will be doing a number of assignments. These can be done in consultation with other students in your class, but with the help of nobody else. They will be overdue if not handed in at the beginning of the class on the due date, but can be handed in up to one day late with only a one mark deduction.

The term mark is the average of the scores on your in-class tests. However, if the average of your assignment scores is at least 70% and your in-class participation is satisfactory, I will throw out your worst test before I calculate the average.

If you miss an in-class test for ANY reason, you will get a zero. There will be no make-ups. But with decent assignment scores and class participation, that zero will be tossed out.

3. MARK FOR THE COURSE. Your course mark is the larger of:

    a) The average of your term percentage and your final exam percentage
    b) Your final exam percentage

6. Grading System

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 at **camosun.ca** or information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: 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	*In progress*: 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	*Compulsory Withdrawal:* 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.

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.

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 on the College web site in the Policy Section.