CAMOSUN COLLEGE	**School of Arts & Science** **DEPARTMENT OF MATHEMATICS AND STATISTICS** **MATH 191-X02** **Applied Math for Civil/Mech 1** **Fall 2017**	

COURSE OUTLINE

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

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:	Josh Manzer
(b)	Office Hours:	Schedule posted on D2L, or by appointment
(c)	Location:	CBA 151
(d)	Phone:	250-370-4490
(e)	Email:	ManzerJ@camosun.bc.ca
(f)	Website:	D2L (http://online.camosun.ca)

2. Intended Learning Outcomes

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

1. Evaluate limits of functions. Using the limit definition, find derivatives of simple algebraic functions. Use derivatives to determine the slope of the tangent line to a curve, velocity, acceleration, and rates of change.
2. Use the power, product, quotient and chain rules to differentiate algebraic, trigonometric, logarithmic and exponential functions. Use implicit differentiation.
3. Find tangents and normals to given functions. Use Newton's Method to find an approximate solution to an equation. Solve problems involving related rates, curve sketching, maxima and minima, and parametrically defined curves. Find differentials, estimate errors, and linearize functions.
4. Find antiderivatives of functions and evaluate both indefinite and definite integrals. Use the trapezoidal rule and Simpson's Rule to approximate a definite integral.
5. Use integration to solve applications problems including the area between curves, volumes of solids of revolution, and centroids.
6. Calculate determinants of 2x2 and 3x3 matrices. Add, subtract and multiply matrices. Calculate the inverse of a matrix. Solve 2x2 and 3x3 linear systems using Gauss-Jordan elimination, augmented matrices and inverse matrices.

3. Required Materials

- Textbook: Allyn J. Washington and Michelle Boué, Basic Technical Mathematics with Calculus, SI Version, 10th Ed.

- Non-programmable, non-graphing calculator. The SHARP EL-531X calculator sold at the bookstore is recommended.

4. Course Content and Schedule

Chapter 23: The derivative
- Limits (23.1)
- The Slope of a Tangent to a Curve (23.2)
- The Derivative (23.3)
- The Derivative as an Instantaneous Rate of Change (23.4)
- Derivatives of Polynomials (23.5)
- Derivatives of Products and Quotients of Functions (23.6)
- The Derivative of a Power of a Function (23.7)
- Differentiation of Implicit Functions (23.8)
- Higher Derivatives (23.9)

Chapter 24: Applications of the derivative
- Tangents and Normals (24.1)
- Newton's Method (24.2)
- Curvilinear Motion (24.3)
- Related Rates (24.4)
- Using Derivatives in Curve Sketching (24.5)
- Applied Maximum and Minimum Problems (24.7)
- Differentials and Linear Approximations (24.8)

Chapter 27: Transcendental functions
- Derivatives of the Sine and Cosine Functions (27.1)
- Derivatives of the Other Trigonometric Functions (27.2)
- Derivatives of the Inverse Trigonometric Functions (27.3)
- Derivatives of the Logarithmic Function (27.5)
- Derivatives of the Exponential Function (27.6)
- Applications (27.8)

Chapter 25: Integration
- Antiderivatives (25.1)
- The Indefinite Integral (25.2)
- The Area Under a Curve (25.3)
- The Definite Integral (25.4)
- Numerical Integration: The Trapezoidal Rule (25.5)
- Simpson's Rule (25.6)

Chapter 26: Applications of Integration
- Applications of The Definite Integral (26.1)
- Areas by Integration (26.2)
- Volumes by Integration (26.3)
- Centroids (26.4)
- Other Applications (26.6)

Chapter 16: Matrices and Systems of Linear Equations
- Definitions and Basic Operations (16.1)
- Multiplication of Matrices (16.2)
- Finding the Inverse of a Matrix (16.3)
- Matrices and Linear Equations (16.4)
- Gaussian Elimination (16.5)

4. **Basis of Student Assessment (Weighting)**

   (a) In-class Assignments (11%)

   You are expected to participate in short assignments during class throughout the term, which will be submitted for marks.

   (b) Tests (39%)

   There will be 3 tests written in class, tentatively scheduled for October 6th, November 3rd, and December 1st.

   (c) Final Exam (50%)

   The final exam will be 3 hours long and cover material from the entire course. It will be scheduled by the College during the final exam period, December 11th-19th. **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/pdf/academic-policies.pdf.

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 E-1.5 at **camosun.ca** for 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, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. *(For these courses a final grade will be assigned to either the 3rd course attempt or at the point of course completion.)*
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.

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 the College web site in the Policy Section.

Math Lab:

You can get **free face-to-face tutoring** from the instructional assistants in the drop-in help centre, TEC 142. The hours are posted on the door and on the Math Department page http://camosun.ca/learn/programs/math/. The room is also available for you to study and work on math homework.

Important Dates:

Sept 5th: First day of class

Sept 19th: Fee deadline

Oct 9th: Thanksgiving holiday (no class)

Nov 7th: Last day to with withdraw without failing grade

Nov 13th: College closed for Remembrance Day weekend (no class)

Dec 8th: Last day of class

Dec 11th – 19th: Exam Period