![Camosun College logo]	**School of Arts & Science** **Department of Mathematics & Statistics** **MATH 185-X03** **MATH FOR CIVIL/MECH 1** **Quarter 1 2015**

COURSE OUTLINE

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

✴ *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:	Raymond Lai
(b)	Office Hours:	Monday to Friday 12:30pm – 1:20pm
(c)	Location:	CBA 152
(d)	Phone:	250-370-4491
(e)	Email:	lai@camosun.bc.ca
(f)	Website:	http://faculty.camosun.ca/raymondlai/

2. Intended Learning Outcomes

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

1. Find the components of a vector. Calculate the dot and cross product of two vectors in two and three dimensions. Use the dot and cross product in applications such as determining the angle between two vectors and finding the projection of one vector on another.
2. Calculate the determinant of a matrix. Add, subtract and multiply matrices. Calculate the inverse of a matrix. Solve linear systems using Gauss-Jordan elimination, augmented matrices and inverse matrices.
3. 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.
4. Use the power, product, quotient and chain rules to differentiate, algebraic, trigonometric, logarithmic and exponential functions. Use implicit differentiation.
5. Find tangents and normals to given functions. Solve problems involving related rates, curve sketching, and maxima and minima. Find the velocity and acceleration for a particle moving along a parametrically defined curve.

3. Required Materials

(a) Textbook: Allyn J. Washington, Basic Technical Mathematics with Calculus, SI Version, 10th Ed.
(b) Scientific Calculator (Graphing Calculators are not permitted.)

4. Course Content and Schedule

Section 1   Limits   (Textbook section 23.1)
Section 2   Slope of a Tangent to a Curve   (Textbook section 23.2)
Section 3   The Derivative   (Textbook section 23.3)
Section 4   Derivatives of Polynomials   (Textbook section 23.5)
Section 5   Derivatives as an Instantaneous Rate of Change   (Textbook section 23.4)
Section 6   Higher Derivatives   (Textbook section 23.9)
Section 7   Derivatives of Products and Quotients   (Textbook section 23.6)
Section 8   Derivatives of Powers of Functions & Chain Rule   (Textbook section 23.7)
Section 9   Derivatives of Implicit Functions   (Textbook section 23.8)

Section 10   Tangents and Normals   (Textbook section 24.1)
Section 11   Newton's Method for Solving Equations   (Textbook section 24.2)
Section 12   Curvilinear Motion   (Textbook section 24.3)
Section 13   Related Rates   (Textbook section 24.4)
Section 14   Using Derivatives in Curve Sketching   (Textbook sections 24.5 and 24.6)
Section 15   Applied Max/Min Problems   (Textbook section 24.7)
Section 16   Linear Approximations   (Textbook section 24.8)

Section 17   Derivatives of Sine and Cosine Functions   (Textbook section 27.1)
Section 18   Derivatives of the Other Trigonometric Functions   (Textbook section 27.2)
Section 19   Derivatives of the Inverse Trigonometric Functions   (Textbook section 27.3)
Section 20   Applications   (Textbook section 27.4)
Section 21   Derivatives of Logarithmic Functions   (Textbook section 27.5)
Section 22   Derivatives of Exponential Functions   (Textbook section 27.6)

Section 23   Vectors: Dot Product, Projections and Cross Product   (Textbook section 16.2)
Section 24   Introduction to Matrices: Definitions and Basic Operations   (Textbook section 16.1)
Section 25   Matrix Multiplication   (Textbook section 16.2)
Section 26   Matrix Inverses   (Textbook sections 16.2 and 16.3)
Section 27   Matrices and Linear Equations   (Textbook section 16.4)
Section 28   Gaussian Elimination and Gauss Jordan Elimination   (Textbook section 16.5)

Tentative Assessment Schedule:
Term Tests: Wednesday October 21st, Monday November 9th, Wednesday December 2nd
Final Exam: During the week of December 14 – December 18

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5.   Basis of Student Assessment (Weighting)

3 Term Tests (with equal weights) for a total of 50%
Final Exam for 50%

Requests for makeup term tests and final exam due to illness must be supported by your physician's note.

If your term grade is at least 50% *and* your final exam grade is higher than your term grade, then your final exam grade will count as 100% of the course grade.

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.