



School of Arts & Science  
MATHEMATICS DEPARTMENT  
MATH 185  
Technical Mathematics 1  
Quarter 1 2010

## 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:	Leah Howard		
(b)	Office Hours:	11:30-12:30 daily and by appointment		
(c)	Location:	CBA 147		
(d)	Phone:	370-4448	Alternative Phone:	
(e)	Email:	howardl@camosun.bc.ca		
(f)	Website:	www.leahhoward.com		

### 2. Intended Learning Outcomes

(No changes are to be made to these Intended Learning Outcomes as approved by the Education Council of Camosun College.)

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

1. Find the components of a vector. Calculate the dot product 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, finding the projection of one vector on another, and finding the equation of a plane given three points on the plane.
2. Determine the dimension of a matrix. Complete basic operations on matrices. Calculate the inverse of a matrix. Solve linear systems using augmented matrices and inverse matrices.
3. Take limits and derivatives of functions using the limit definition. Find the slope of the tangent line to a curve. Use derivatives to determine velocity, acceleration, and rates of change of one variable with respect to another.
4. Use the power rule, chain rule, product, quotient rule, and implicit differentiation to differentiate polynomial functions, trigonometric functions, logarithm functions and exponential functions.
5. Find tangents and normal to given functions. Solve problems involving related rates, curve sketching, and applied maximum and minimum problems. Find velocity and acceleration for parametrically defined curves.

### 3. Required Materials

- (a) Allyn J. Washington, Basic Technical Mathematics with Calculus, SI Version, 9th Ed.

Matrix Algebra course materials (available in the bookstore)

Vector course materials (available on the course website)

- (b) Scientific Calculator

### 4. Course Content and Schedule

#### CALCULUS

##### 23.1 Limits

##### 23.2 Slope of the Tangent

##### 23.3 The Derivative

##### 23.4 Instantaneous Rate of Change

##### 23.5 Derivatives of Polynomials

##### 23.6 Derivatives of Products and Quotients

##### 23.7 Derivatives of Powers of Functions & Chain Rule

## 23.8 Derivatives of Implicit Functions

- 24.1 Tangents and Normals
- 24.2 Newton's Method
- 24.3 Curvilinear Motion
- 24.4 Related Rates
- 24.5 Curve Sketching
- 24.6 More on Curve Sketching
- 24.7 Applied Max/Min Problems
- 24.8 Linear Approximations

- 25.1 Antiderivatives
- 25.2 The Indefinite Integral
- 25.3 The Area Under a Curve
- 25.4 The Definite Integral
- 25.5 The Trapezoidal Rule

### MATRICES [Materials available at the bookstore]

- 7.1-7.2 Review of Substitution and Elimination Methods for 2x2 Systems
- 8.1 Gaussian Elimination and Word Problems
- 8.2 Matrix Operations
- 8.3 The Inverse of a Square Matrix
- 8.4 The Determinant of a Square Matrix
- 8.5 Applications

### VECTORS [Materials on course website]

V1-V4 Vector Concepts, Dot Product, Cross Product and Applications

## 5. Basis of Student Assessment (Weighting)

The lowest quiz grade will be dropped when calculating the quiz average. This allows a student to be absent on any one quiz day for any reason, including illness, without penalty. There is no provision for making up a missed quiz.

If the final exam grade is higher than the term grade and the term grade is 50% or higher, then the final exam grade will count as 100% of the final grade.

- (a) Four quizzes, total weight 50%
- (b) Final Exam, weight 50%

## 6. Grading System

*(No changes are to be made to this section unless the Approved Course Description has been forwarded through the Education Council of Camosun College for approval.)*

### 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](http://camosun.ca) 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, 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. <i>(For these courses a final grade will be assigned to either the 3<sup>rd</sup> course attempt or at the point of course completion.)</i>
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.

## 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](http://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.