

	<p><b>School of Arts &amp; Science</b>  <b>MATHEMATICS DEPARTMENT</b></p> <p><b>MATH 174B-001</b>  <b>Mathematics for Electronics 4</b>  <b>2012 Q2</b></p>
---	---

## COURSE OUTLINE

The Approved Course Description is available on the web @ <http://camosun.ca/learn/calendar/current/web/math.html>

- Please note: this outline will be electronically stored for five (5) years only.  
It is strongly recommended students keep this outline for your records.

### 1. Instructor Information

(a)	Instructor:	Laura Shepherd		
(b)	Office Hours:	MWTh 11:30-1:30 CBA 147 & MW 2:30 - 5:30 E262		
(c)	Location:	CBA 147 E262		
(d)	Phone:	3500	Alternative Phone:	
(e)	Email:	shepherd@camosun.bc.ca		
(f)	Website:	<a href="https://sites.google.com/site/lmds5637/main/m174b">https://sites.google.com/site/lmds5637/main/m174b</a>		

### 2. Intended Learning Outcomes

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

1. Use derivatives to find tangents and normals to lines. Use Newton's Method to solve equations. Solve word problems involving curvilinear motion and equations in parametric form. Solve word problems involving related rates.
2. Sketch curves using derivatives to find local maxima and minima. Calculate the equations of asymptotes and use symmetry arguments to sketch curves. Solve application problems involving maxima and minima.
3. Calculate differentials and use linear approximations to evaluate expressions.
4. Calculate derivatives of sine, cosine, and other trigonometric functions. Find derivatives of inverse trigonometric functions.
5. Calculate derivatives of logarithmic and exponential functions.
6. Find anti-derivatives of functions. Integrate definite and indefinite integrals. Find the area under a curve using numerical methods and contrast the results with those found by using integrals.
7. Use the techniques of numerical integration to calculate integrals for functions that cannot be integrated directly. Calculate integrals using the trapezoidal rule and Simpson's rule.
8. Solve word problems involving applications of the indefinite integral. Calculate areas under curves using integration techniques. Find the volume of a solid of revolution using integration techniques.

### 3. Required Materials

**Text** Allyn J. Washington, *Basic Technical Mathematics with Calculus, SI version*, 8<sup>th</sup> edition, Pearson Education Canada, 2005.

## 4. Course Content and Schedule

### 1. APPLICATIONS OF THE DERIVATIVES

- Tangents and Normals (section 24.1)
- Newton's Method (section 24.2)
- Curvilinear Motion (section 24.3)
- Related Rates (section 24.4)
- Using Derivatives in Curve Sketching (section 24.5)
- More on Curve Sketching (section 24.6)
- Applied Maximum and Minimum Problems (section 24.7)
- Differentials and Linear Approximations (section 24.8)

### 2. DIFFERENTIATION OF TRANSCENDENTAL FUNCTIONS

- Derivatives of the Sine and Cosine Functions (section 27.1)
- Derivatives of the Other Trigonometric Functions (section 27.2)
- Derivatives of the Inverse Trigonometric Functions (section 27.3)
- Derivatives of the Logarithmic Function (section 27.5)
- Derivatives of the Exponential Function (section 27.6)

### 3. INTEGRATION

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

### 4. APPLICATIONS OF INTEGRATION

- Applications of The Definite Integral (section 26.1)
- Areas by Integration (section 26.2)
- Volumes by Integration (section 26.3)

### 5. Basis of Student Assessment (Weighting)

(a) Four term tests (12.5% each).

(b) Comprehensive Final Exams 50% or 100%\*

\*If your term work is **complete** and **satisfactory** (i.e. at least 50 %,) and your final is better than your term work, then your final will count for 100% of your grade. There is no provision for "making up" a missed quiz.

## 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](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

For extra help please see the [Math Lab hours](http://camosun.ca/learn/programs/math/labs.html) at <http://camosun.ca/learn/programs/math/labs.html>

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 on the College web site in the Policy Section.

### ADDITIONAL COMMENTS

#### CALCULATOR POLICY

*As per Math Department policy, the only calculator permitted for use on tests and the final exam is the Sharp EL-531W scientific calculator. No other make/model of calculator is permitted, nor are other electronic devices such as cell phones, PDAs, laptop computers, MP3 players, electronic translators, etc.*