



**School of Arts & Science  
MATHEMATICS DEPARTMENT**

**MATH 189-X01 & X02  
Math for Civil/Mech 3  
Q1 2014**

## COURSE OUTLINE

The Approved Course Description is available on the web @  
<http://camosun.ca/learn/calendar/current/web/math.html#MATH189>

\* 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:	Leah Howard		
(b)	Office Hours:	Monday- Friday 11:45-1:15		
(c)	Location:	CBA 151		
(d)	Phone:	(250) 370-4490	Alternative Phone:	
(e)	Email:	howardl@camosun.bc.ca		
(f)	Website:	www.leahhoward.com		

**Math help is also available in the Math Lab in TEC 142. Hours are posted on the door.**

### 2. Intended Learning Outcomes

*(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)*

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

1. Solve separable and linear first-order differential equations.
2. Use the numerical methods of Euler and Runge-Kutta to find approximate solutions to first-order differential questions.
3. Solve second-order linear homogeneous and non-homogeneous differential equations with constant coefficients.
4. Solve application problems involving first and second-order differential equations, including mass-spring systems.
5. Calculate probabilities using the following: basic properties, simple events, counting techniques, conditional probability, independence, and Bayes' theorem.
6. Graph a data set using a variety of presentations. Calculate the mean, median, and standard deviation of a data set and interpret the results.
7. Solve problems involving discrete probability distributions such as binomial, Poisson, and hyper-geometric, and continuous probability distributions such as the normal distribution. Calculate point estimates and confidence intervals for both large and small samples.
8. For a bivariate data set, calculate the linear regression line using the method of least squares, either using a scientific calculator or using appropriate software (Excel, Matlab, etc.). Calculate and interpret the coefficients of correlation and determination.

### 3. Required Materials

- (a) Text: Allyn J. Washington, Basic Technical Mathematics with Calculus, SI version, 9th edition, Pearson Education Canada. (The 8th edition is also acceptable.)
- (b) Calculator: Only scientific calculators (non-programmable, non-graphing) will be permitted for tests and exams. The use of other electronic devices is not permitted.

#### 4. Course Content and Schedule

Differential Equations                      Washington, Basic Technical Mathematics with Calculus

- 31.1 Solutions of Differential Equations
- 31.2 Separation of Variables
- 31.3 Integrating Combinations
- 31.4 The Linear Differential Equation of the First Order
- 31.5 Numerical Solutions of First-Order Equations
- 31.6 Elementary Applications
- 31.7 Higher-Order Homogeneous Equations
- 31.8 Auxiliary Equations with Repeated or Complex Roots
- 31.9 Solutions of Non-Homogeneous Equations
- 31.10 Applications of Higher-Order Equations

Statistics                                      Suggested homework problems and solutions are online

- 1. Variables and Data; Types of Variables
- 2. Bar Charts, Histograms, Stem and Leaf Plots
- 3. Mean, Median and Mode
- 4. Range, SD and Variance
- 5. Tchebysheff and Empirical Rules
- 6. Linear Regression
- 7. Introduction to Probability
- 8. Conditional Probability and Independence
- 9. Random Variables
- 10. The Binomial Distribution
- 11. The Poisson Distribution
- 12. The Normal Distribution
- 13. The Central Limit Theorem
- 14. Confidence Intervals
- 15. One-Sided Confidence Bounds

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

The final grade will be calculated according to the following breakdown:

Three Tests:	45% total (15% each)
Four Assignments:	5% total
Final Exam:	50%

Assignments are due at the beginning of class. Late assignments will not be accepted.

If a student misses a test for any reason, the exam will be worth 65%. There is no provision for making up a missed test.

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

The final exam will cover the entire course and will be 3 hours long. As stated in the current college calendar, "students are expected to write final examinations at the scheduled time and place." Exceptions will only be considered due to **emergency** circumstances as outlined in the calendar. Holidays or scheduled flights are not considered to be emergencies.

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## 6. Grading System

(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO 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. (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.)
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 on the College web site in the Policy Section.