



**CAMOSUN COLLEGE**  
**School of Arts & Science**  
**Department of Mathematics & Statistics**

**MATH-193-X02**  
**Applied Math for Civil/Mech 2**  
**Winter 2018**

## **COURSE OUTLINE**

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

*Ω Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.*

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### **1. Instructor Information**

<b>(a) Instructor</b>	Susie Wieler
<b>(b) Office hours</b>	TBA
<b>(c) Location</b>	CBA 147
<b>(d) Phone</b>	250-370-4448 <b>Alternative:</b>
<b>(e) E-mail</b>	wielers@camosun.bc.ca
<b>(f) Website</b>	D2L

### **2. Intended Learning Outcomes**

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

1. Integrate algebraic, exponential, logarithmic and trigonometric functions.
2. Use methods of integration, including integration by parts and non-repeated linear partial fractions
3. Find partial derivatives of functions.
4. Evaluate double integrals using both Cartesian and polar coordinates and use double integration to calculate volumes under three-dimensional surfaces.
5. Solve separable and linear first-order differential equations.
6. Solve second-order linear homogeneous and non-homogeneous differential equations with constant coefficients.
7. Solve application problems involving first and second-order differential equations, including mass-spring systems.
8. Calculate probabilities using counting techniques and basic probability.
9. Graph a data set using a variety of presentations. Calculate the mean, median, and standard deviation of a data set and interpret the results.
10. Solve problems involving discrete probability distributions such as binomial and Poisson, and continuous probability distributions such as the normal distribution.
11. Calculate point estimates and confidence intervals for means of both large and small samples.
12. 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. Calculate and interpret the coefficients of correlation and determination.

### 3. Required Materials

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

Note: the exercises and solutions from this textbook are posted on D2L, and are available for printing at the Satellite Printshop in the CBA main floor Atrium

**Coursepack** for the Statistics portion of the course – will be available for purchase at the Satellite Printshop around week 8

**Scientific Calculator** (graphing calculators are not permitted). The SHARP EL-531X is recommended.

### 4. Course Content and Schedule

Chapter 28 Methods of Integration

The General Power Formula (28.1)

The Basic Logarithmic Form (28.2)

The Exponential Form (28.3)

Basic Trigonometric Forms (28.4)

Inverse Trigonometric Forms (28.6)

Integration by Parts (28.7)

Integration by Partial Fractions: Nonrepeated Linear Factors (28.9)

Chapter 29 Partial Derivatives and Double Integrals

Partial Derivatives (29.3)

Double Integrals (29.4) – including polar coordinates

Chapter 31 Differential Equations

Solutions of Differential Equations (31.1)

Separation of Variables (31.2)

The Linear Differential Equation of the First Order (31.4)

Elementary Applications (31.6)

Higher-Order Homogeneous Equations (31.7)

Auxiliary Equations with Repeated or Complex Roots (31.8)

Solutions of Nonhomogeneous Equations (31.9)

Applications of Higher-Order Equations (31.10)

Probability and Statistics

Collection and Representation of Data

Summarizing Data

Probability

Discrete Random Variables

Binomial and Poisson Distributions

Continuous Random Variables

The Normal Distribution

Central Limit Theorem

Confidence Intervals

Linear Regression

## 5. Basis of Student Assessment (Weighting)

**Quizzes:** 5%

A short quiz will be given at the beginning of class on **Wednesdays**. The two lowest quiz grades will be dropped. There are no make-up quizzes, even if a student is absent.

**Tests:** 45%

Tentative Test Dates:    February 2    March 9    April 6

**Final Exam:** 50%

If a student's final exam grade is higher than his/her term grade AND the term work is complete and 50% or higher, then the final exam grade will count as 100% of the overall course 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 tests and 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.

The Department of Mathematics and Statistics has prepared a handout called *Student Guidelines for Academic Integrity* to help you interpret college policies involving student conduct, academic dishonesty plagiarism, etc. It is your responsibility to become familiar with the contents of the document and the college policies it references.

## 6. Grading System

Standard Grading System (GPA)

Competency Based Grading System

## 7. Recommended Materials to Assist Students to Succeed Throughout the Course

Leah Howard's Video Lectures: <http://leahhoward.com/m193/math193videos.html>

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

The library has copies of this textbook on reserve.

The Math Lab in TEC 142 has a tutor on staff. Hours are posted on the door.

[www.wolframalpha.com](http://www.wolframalpha.com) and [www.desmos.com](http://www.desmos.com) have excellent free graphing software

## 8. College Supports, Services and Policies



### Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ <http://camosun.ca/about/mental-health/emergency.html> or <http://camosun.ca/services/sexual-violence/get-support.html#urgent>

### College Services

Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at <http://camosun.ca/>

### College Policies

Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at <http://camosun.ca/about/policies/>. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

### A. GRADING SYSTEMS <http://camosun.ca/about/policies/index.html>

The following two grading systems are used at Camosun College:

#### 1. 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		1
0-49	F	Minimum level has not been achieved.	0

## 2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

## B. 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 at <http://camosun.ca/about/policies/index.html> 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 are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
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.