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

MATH-193-X01
Applied Math for Civil/Mech 2
Summer 2020

COURSE OUTLINE

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

◻ *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.*

1. Instructor Information

(a)	**Instructor**	Torsten Schoeneberg
(b)	**Office hours**	by appointment
(c)	**Location**	off campus
(d)	**Phone**	n/a **Alternative:**
(e)	**E-mail**	schoenebergt@camosun.bc.ca
(f)	**Website**	D2L: https://online.camosun.ca/d2l/home/170174

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

(a) A scientific (non-graphing) calculator. The SHARP EL-531 or EL-520 are recommended.
(b) The suggested homework problems and answers are on D2L.
(c) Optional Textbooks: Allyn J. Washington and Michelle Boué, *Basic Technical Mathematics with Calculus*, SI Version, 11th edition; and Stephens: *Beginning Statistics (Schaum's Course Outline)*. Both textbooks are available for purchase as e-texts via https://www.camosuncollegebookstore.ca/buy_textbooks.asp? (select INT - 2020, then Math, then Math 193, then X01, and you should see both). Note that the Washington book is the same that was used for Math 191.
(d) Additional material posted on D2L website, including lecture notes and videos.

4. Course Content and Schedule

CALCULUS
28.1 The General Power Formula
28.2 The Basic Logarithmic Form
28.3 The Exponential Form
28.4 Basic Trigonometric Forms
28.6 Inverse Trigonometric Forms
28.7 Integration by Parts
28.9 Partial Fractions (Non-repeated Linear Factors)
29.3 Intro to Surfaces, Partial Derivatives
29.4 Double Integrals

DIFFERENTIAL EQUATIONS
31.1 Solutions of Differential Equations
31.2 Separation of Variables
31.4 First-Order Linear Differential Equations
31.6 Applications of First-Order DE
31.7 Higher-Order Homogeneous DE with Constant Coefficients
31.8 Auxiliary Equations with Repeated and Complex Roots
31.9 Higher-Order Non-Homogeneous DE with Constant Coefficients
31.10 Applications of Higher-Order DE

STATISTICS
Section 1 Collection and Representation of Data
Section 2 Summarizing Data
Section 3 Probability
Section 4 Discrete Random Variables
Section 5 Binomial and Poisson Distributions
Section 6 Continuous Random Variables
Section 7 The Normal Distribution
Section 8 The Central Limit Theorem
Section 9 Confidence Intervals
Section 10 Linear Regression

5. Basis of Student Assessment (Weighting)

(a) Weekly Homework Assignments

Weekly assignments, to be submitted at myopenmath.com. Our course ID on this website is **71768**, the password is **camosun**.

(b) 3 Midterm Tests

Scheduled for May 29, June 26, July 31. Each midterm test will be sent out electronically at 8.30am, and scans/photos of solutions are to be sent back by 9.45am. (Suggested time for test: 60 minutes, for printing/scanning/taking photos: 15 minutes).

(c)   Optional final exam: Held in the examination week August 10-18.

The **final grade** will be the better of: (I) 10% homework assignments, 90% midterm tests (30% each); or (II) 5% homework assignments, 45% midterm tests (15% each), 50% final exam.

6. Grading System

| X | Standard Grading System (GPA) |

| | Competency Based Grading System |

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

See under 3.

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	*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 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	*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.