COURSE SYLLABUS

COURSE TITLE: MATH-193: Applied Math for Civil/Mech 2

CLASS SECTION: X02

TERM: Winter 2023

COURSE CREDITS: 3

DELIVERY METHOD(S): Lecture

Camosun College campuses are located on the traditional territories of the Lək̓ʷəŋən and W̱SÁNEĆ peoples. We acknowledge their welcome and graciousness to the students who seek knowledge here.
Learn more about Camosun's Territorial Acknowledgement.

For COVID-19 information please visit https://camosun.ca/about/covid-19-updates .

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable explanation in advance, you will be removed from the course and the space offered to the next waitlisted student.

INSTRUCTOR DETAILS

NAME: Susie Wieler

EMAIL: wielers@camosun.ca

OFFICE: CBA 147

HOURS: Mondays & Fridays 12:00-1:00, Wednesdays 1:00-2:00, Thursdays 1:30-2:30

As your course instructor, I endeavour to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me. Camosun College is committed to identifying and removing institutional and social barriers that prevent access and impede success.

CALENDAR DESCRIPTION

Students will continue to explore the integral calculus topics begun in MATH 191 and then be introduced to ordinary differential equations and to probability and statistics, with a focus on applications to civil and mechanical engineering technology. In calculus, students will study integration techniques, polar coordinates, and double integrals. Students then learn to solve introductory first and second order differential equations with applications. In probability and statistics, students will examine measures of centre and variability; discrete and continuous random variables; confidence intervals; and linear regression.

PREREQUISITE(S):

One of:

- C in MATH 101
- C in MATH 191

CO-REQUISITE(S):

Not applicable

EXCLUSION(S):

Not applicable

COURSE LEARNING OUTCOMES / OBJECTIVES

Upon completion of this course a 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.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

Coursepack available for printing or tablet use

SHARP EL-W516 calculator

myopenmath.com account

Course ID	167701
Enrollment key	homework

COURSE SCHEDULE, TOPICS, AND ASSOCIATED PREPARATION / ACTIVITY / EVALUATION

The following schedule and course components are subject to change with reasonable advance notice, as deemed appropriate by the instructor.

WEEK or DATE RANGE	ACTIVITY or TOPIC	OTHER NOTES
Weeks 1-13	MyOpenMath assignments due Sundays at 11:59 pm	
February 1	Test 1 (Chapters 28 and 29)	
March 6	Test 2 (Chapter 31)	
April 6	Test 3 (Statistics)	
April 17-25	Exam Period (schedule posted Feb 17)	

Students registered with the Centre for Accessible Learning (CAL) who complete quizzes, tests, and exams with academic accommodations have booking procedures and deadlines with CAL where advance notice is required. Deadlines can be reviewed on the CAL exams page. http://camosun.ca/services/accessible-learning/exams.html

TOPICS – Chapter and section numbering follows *Basic Technical Mathematics, With Calculus, SI Version, Tenth Edition* by Allyn J. Washington and Michelle Boue

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)

continued…

Probability and Statistics (coursepack)

1. Graphing and Summarizing Data
2. Counting and Probability
3. Discrete Random Variables
   Binomial and Poisson Distributions
4. Continuous Random Variables
   The Normal Distribution
   Central Limit Theorem
5. Confidence Intervals
6. Linear Regression

EVALUATION OF LEARNING

Option 1:

DESCRIPTION	WEIGHTING
Assignments (13)	10%
Tests (weighted 20%, 15%, 15% from highest to lowest marks)	50%
Final Exam	40%
TOTAL	100%

Option 2: Students must write all 3 tests to be eligible to choose this option

DESCRIPTION	WEIGHTING
Assignments (13)	10%
Tests (weighted 35%, 30%, 25% from highest to lowest marks)	90%
TOTAL	100%

Policy regarding missed tests:

- If a student misses one (1) test for any reason, their final exam mark will also be used as their mark on the missed test.
- If a student needs to miss a second or third test, the student is required to contact me before the test. Documentation to verify the reason for the absence may be requested, and alternate arrangements will be made on a case-by-case basis. Students who fail to contact me will receive a mark of zero (0) on the missed test(s).

If you have a concern about a grade you have received for an evaluation, please come and see me as soon as possible. Refer to the Grade Review and Appeals policy for more information.
http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf

COURSE GUIDELINES & EXPECTATIONS

The following content is available on D2L:

- Lecture notes will be posted shortly after each class.
- Scans of the Problem Sets from the following textbook are available for extra practice, along with answers and step-by-step solutions: *Basic Technical Mathematics, With Calculus, SI Version, Tenth Edition* by A. Washington and M. Boue.
- Step-by-step solutions for the exercises in the Statistics chapter of the coursepack.
- Practice Questions for each test, along with their step-by-step solutions.
- Test solutions will be posted shortly after each test.

SCHOOL OR DEPARTMENTAL INFORMATION

Interurban Math Lab

Services: Individual tutoring and study space
Location: TEC 142
Schedule: posted on the door
Format: Drop in - first-come, first-served

Chair of the Math & Stats Department: Patrick Montgomery

Phone: 250-370-3502
Office: Ewing 268, Lansdowne Campus
Email: montgomeryp@camosun.ca

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.

STUDENT RESPONSIBILITY

Enrolment at Camosun assumes that the student will become a responsible member of the College community. As such, each student will display a positive work ethic, assist in the preservation of College property, and assume responsibility for their education by researching academic requirements and policies; demonstrating courtesy and respect toward others; and respecting expectations concerning attendance, assignments, deadlines, and appointments.

SUPPORTS AND SERVICES FOR STUDENTS

Camosun College offers a number of services to help you succeed in and out of the classroom. For a detailed overview of the supports and services visit http://camosun.ca/students/.

Academic Advising	http://camosun.ca/advising
Accessible Learning	http://camosun.ca/accessible-learning
Counselling	http://camosun.ca/counselling
Career Services	http://camosun.ca/coop
Financial Aid and Awards	http://camosun.ca/financialaid
Help Centres (Math/English/Science)	http://camosun.ca/help-centres
Indigenous Student Support	http://camosun.ca/indigenous
International Student Support	http://camosun.ca/international/
Learning Skills	http://camosun.ca/learningskills
Library	http://camosun.ca/services/library/
Office of Student Support	http://camosun.ca/oss
Ombudsperson	http://camosun.ca/ombuds
Registration	http://camosun.ca/registration
Technology Support	http://camosun.ca/its
Writing Centre	http://camosun.ca/writing-centre

If you have a mental health concern, please contact Counselling to arrange an appointment as soon as possible. Counselling sessions are available at both campuses during business hours. If you need urgent support after-hours, please contact the Vancouver Island Crisis Line at 1-888-494-3888 or call 911.

COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

Academic Accommodations for Students with Disabilities

The College is committed to providing appropriate and reasonable academic accommodations to students with disabilities (i.e. physical, depression, learning, etc). If you have a disability, the Centre for Accessible Learning (CAL) can help you document your needs, and where disability-related barriers to access in your courses exist, create an accommodation plan. By making a plan through CAL, you can ensure you have the appropriate academic accommodations you need without disclosing your diagnosis or condition to course instructors. Please visit the CAL website for contacts and to learn how to get started: http://camosun.ca/services/accessible-learning/

Academic Integrity

Please visit http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.pdf for policy regarding academic expectations and details for addressing and resolving matters of academic misconduct.

Academic Progress

Please visit http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.1.pdf for further details on how Camosun College monitors students' academic progress and what steps can be taken if a student is at risk of not meeting the College's academic progress standards.

Course Withdrawals Policy

Please visit http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.2.pdf for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit http://camosun.ca/learn/fees/#deadlines.

Grading Policy

Please visit http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf for further details about grading.

Grade Review and Appeals

Please visit http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf for policy relating to requests for review and appeal of grades.

Mandatory Attendance for First Class Meeting of Each Course

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable reason in advance, you will be removed from the course and the space offered to the next waitlisted student. For more information, please see the "Attendance" section under "Registration Policies and Procedures" (http://camosun.ca/learn/calendar/current/procedures.html) and the Grading Policy at http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf.

Medical / Compassionate Withdrawals

Students who are incapacitated and unable to complete or succeed in their studies by virtue of serious and demonstrated exceptional circumstances may be eligible for a medical/compassionate withdrawal. Please visit http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.8.pdf to learn more about the process involved in a medical/compassionate withdrawal.

Sexual Violence and Misconduct

Camosun is committed to creating a campus culture of safety, respect, and consent. Camosun's Office of Student Support is responsible for offering support to students impacted by sexual violence. Regardless of when or where the sexual violence or misconduct occurred, students can access support at Camosun. The Office of Student Support will make sure students have a safe and private place to talk and will help them understand what supports are available and their options for next steps. The Office of Student Support respects a student's right to choose what is right for them. For more information see Camosun's Sexualized Violence and Misconduct Policy: http://camosun.ca/about/policies/education-academic/e-2-student-services-

and-support/e-2.9.pdf and camosun.ca/sexual-violence. To contact the Office of Student Support: oss@camosun.ca or by phone: 250-370-3046 or 250-3703841

Student Misconduct (Non-Academic)

Camosun College is committed to building the academic competency of all students, seeks to empower students to become agents of their own learning, and promotes academic belonging for everyone. Camosun also expects that all students to conduct themselves in a manner that contributes to a positive, supportive, and safe learning environment. Please review Camosun College's Student Misconduct Policy at http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.5.pdf to understand the College's expectations of academic integrity and student behavioural conduct.

Changes to this syllabus: Every effort has been made to ensure that information in this syllabus is accurate at the time of publication. The College reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.