

COURSE SYLLABUS



Camosun College campuses are located on the traditional territories of the Ləkʷəŋən and W̱SÁNEĆ peoples. We acknowledge their welcome and graciousness to the students who seek knowledge here.

Learn more about Camosun's [Territorial Acknowledgement](#).

COURSE TITLE: Applied Math for Ship Stability

CLASS SECTION: DS16

TERM: Fall 2024

COURSE CREDITS: 0

DELIVERY METHOD(S): Online

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: Zahra Khimji

EMAIL: Khimjiz@camosun.bc.ca

VIRTUAL CLASSROOM: <https://whereby.com/zkclass>

OFFICE Hours: By appointment

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

MATH 058 covers topics in mathematics needed to achieve competency in ship construction and stability calculations. Topics include a review of arithmetic, order of operations, exponents and roots, rational numbers, substituting data into formulae, manipulating algebraic equations and formulae, geometry, trigonometry, linear interpolation, graphing and change in cargo moments calculations.

COURSE LEARNING OUTCOMES / OBJECTIVES

At the end of the course, students will be able to:

- Demonstrate knowledge of the language, principles, and operations of basic algebra, geometry and trigonometry.
- Apply a variety of strategies in solving math-related problems.
- Apply knowledge and skills in basic algebra, geometry and trigonometry to solve problems related to study in the Nautical Program.
- Use knowledge of algebra, geometry and trigonometry as a basis for further study in the Nautical Program.

- (a) All course content is available online at D2L site.
- (b) Scientific calculator (Sharp EL531W)

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

Self-paced Instructions

- (a) For each topic of the book listed below, study the explanations and examples, then work through and check your answers to as many exercise problems as you need to fully understand
- (b) Ask for help when you have difficulties, or when you don't understand something
- (c) Complete the Self-Tests for each topic and check your answers, then to prepare for the unit Final Test, complete the Review problems at the end of each unit
- (d) After clearing up any problems and correcting your errors, ask your instructor for authorization to write the unit Final Test
- (e) Review your Final Test results with the instructor, and proceed to the next unit if you pass the test or rewrite the Final Test if you do not pass it.

Calculators may not be used on the Final Tests, unless approved by the instructor

Course Content

<u>Module 1</u>	<p>Review of basic concepts</p> <ul style="list-style-type: none"> • Add, subtract, multiply, and divide whole numbers, fractions and decimals. • Add, subtract, multiply and divide signed numbers. • Understand and use exponents in calculations and formulae. • Understand and use Order of Operations when carrying out multi-operation calculations. • Substitute values into formulae and solve for an indicated variable.
<u>Module 2</u>	<p>Algebra - Introduction to Solving Equations</p> <ul style="list-style-type: none"> • Apply commutative, associative and distributive laws and factoring to solve equations. • Apply addition and multiplication principles to solve equations.
<u>Module 3</u>	<p>Algebra - Evaluating Equations and Manipulating Formulae</p> <ul style="list-style-type: none"> • Apply addition and multiplication principles to manipulate formulae
<u>Module 4</u>	<p>Systems of Units</p> <ul style="list-style-type: none"> • use the common metric units for length, capacity/volume, and mass • convert between metric units using a table and/or a calculator
<u>Module 5</u>	<p>Areas and Simpson's Rules</p> <ul style="list-style-type: none"> • use area formulae to calculate the area of basic shapes

	<ul style="list-style-type: none"> • use area formulae to calculate the area of compound shapes made up of two or more basic shapes • use Simpson's First Rule to calculate water-plane areas • use Simpson's Second Rule to calculate water-plane areas • use Simpson's Third Rule to calculate water-plane areas • combine Simpson's Rules to calculate more complex water-plane areas • use Simpson's Rules to calculate water-plane areas with appendages
<u>Module 6</u>	<p>Volume, Density and Specific Gravity</p> <ul style="list-style-type: none"> • use volume formulae to calculate the volume of basic shapes • use volume formulae to calculate the volume of compound shapes made up of two or more basic shapes • use density, volume and specific gravity formulae to calculate the volume, density and specific gravity of materials stored in a variety of container shapes
<u>Module 7</u>	<p>Moments and Calculating Changes in Centre of Gravity</p> <ul style="list-style-type: none"> • calculate the moments acting on an object • use moment calculations to determine the point of application of a given force required to maintain system equilibrium • use moment calculations to determine the magnitude of force applied at a given point required to maintain system equilibrium • calculate the new centre of gravity for a vessel when cargo is loaded, discharged or shifted
<u>Module 8</u>	<p>Graphs and Linear Interpolation</p> <ul style="list-style-type: none"> • use the rectangular coordinate system to graph the relationship between two variables • use existing data points to predict the values of new data points, using a graph • use existing data points to predict the values of new data points, using linear interpolation
<u>Module 9</u>	<p>Trigonometry</p> <ul style="list-style-type: none"> • Recognize and name the types of angles and triangles. • Convert between decimal degree and Degree-Minute-Second formats. • Use the DMS calculator key to add angles. • Perform calculations using the special properties of 30-60-90, 45-45-90 and 3-4-5 triangles. • Use the Pythagorean Theorem to find the length of the third side of any right triangle, given the lengths of the other two sides. • Identify the hypotenuse, opposite and adjacent sides of a right angle triangle. • Use the trigonometric functions to solve for the missing side of a right triangle, given one of the acute angles and the length of one of the sides of the triangle.

	<ul style="list-style-type: none"> • Use the inverse trigonometric functions to solve for the angles of a right triangle, given the lengths of two of the sides. • Apply trigonometry in Ship Stability calculations.
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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 advanced notice is required. Deadlines can be reviewed on the [CAL exams page](http://camosun.ca/services/accessible-learning/exams.html). <http://camosun.ca/services/accessible-learning/exams.html>

EVALUATION OF LEARNING

The math 058 course has nine (9) unit tests. Students are **required to take all the unit tests** to pass this course. The course grade is either COM (complete) or IP (in progress) or NC (not complete).

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](http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf) policy for more information. <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf>

SCHOOL OR DEPARTMENTAL INFORMATION

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.

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/education-academic/e-1-programming-and-instruction/e-1.5.pdf> for information on conversion to final grades, and for additional information on student record and transcript notations.

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/>.

Support Service	Website
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.