Welcome to Camosun College!

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

School of Access – Community Learning Partnerships Department

MATH 058 D01 Applied Math for Ship Stability

COURSE OUTLINE Fall 2020

The Approved Course Description is available on the College website
http://camosun.ca/learn/calendar/current/web/math.html#MATH058

Ω *Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records.*

1. Instructor Information

(a)	**Instructor**	Zahra Khimji
(b)	**Office hours**	By appointment
(c)	**Location**	Interurban CBA 150
(d)	**Phone**	250-370 – 4911
(e)	**E-mail**	KhimjiZ@camosun.bc.ca

2. Intended Learning Outcomes

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

1. Demonstrate knowledge of the language, principles, and operations of basic algebra, geometry and trigonometry.

2. Apply a variety of strategies in solving math-related problems.

3. Apply knowledge and skills in basic algebra, geometry and trigonometry to solve problems related to study in the Nautical Program.

4. Use knowledge of algebra, geometry and trigonometry as a basis for further study in the Nautical Program.

3.   Required Materials

a) All course content is available online (https://online.camosun.ca)
b) Scientific calculator (Sharp EL531W)

4. Course Content

Module 1	**Review of basic concepts** • 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.
Module 2	**Algebra - Introduction to Solving Equations** • Apply commutative, associative and distributive laws and factoring to solve equations. • Apply addition and multiplication principles to solve equations.
Module 3	**Algebra - Evaluating Equations and Manipulating Formulae** • Apply addition and multiplication principles to manipulate formulae
Module 4	**Systems of Units** • use the common metric units for length, capacity/volume, and mass • convert between metric units using a table and/or a calculator
Module 5	**Areas and Simpson's Rules** • use area formulae to calculate the area of basic shapes • 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
Module 6	**Volume, Density and Specific Gravity** • 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
Module 7	**Moments and Calculating Changes in Centre of Gravity** • 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
Module 8	**Graphs and Linear Interpolation** • 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

Module 9	**Trigonometry**
	• 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.
	• 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.

5. Basis of Student Assessment (Weighting)

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).

Note:
Students with a record of poor attendance OR poor progress may be restricted from re-registering in Community Learning Partnerships Department courses.

6. Grading System

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.

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

> **Ask your course instructor FIRST and then you could also go to:**
> **ACADEMIC UPGRADING HELP CENTRES (CBA 109 and E342)**
> http://camosun.ca/services/help-centres/math.html

There are many other Camosun services available to help you succeed in and

out of the classroom, including education planning, learning and personal

support, campus life, work and housing, and getting around. This information is available at Registration or the College web site http://camosun.ca/services/

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.