CAMOSUN COLLEGE
School of Access
Academic and Career Foundations Department

MATH 058 Applied Math for Ship Stability

COURSE OUTLINE

The Approved Course Description is available on the College website *http://www.camosun.bc.ca/learn/calendar/index.html*

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

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1. Instructor Information

(a) Instructor:	Pooja Gupta		
(b) Office hours:	By Arrangement		
(c) Location:	CBA 110		
(d) Phone:	250-370-4915	Text msg only:	778-677-0150
(e) E-mail:	guptap@camosun.ca		
(f) Website:	https://online.camosun.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
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.

6. Grading System

Competency based grading system

Grade	Description
COM	The student has met 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 Materials or Services to Assist Students to Succeed Throughout the Course

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College calendar, Registration, or on the College website *http://camosun.ca/services/*

ACADEMIC CONDUCT POLICY

It is the student's responsibility to become familiar with the content of the Academic Conduct Policy. The policy is available in each School Administration Office, Registration, and on the College website *http://camosun.ca/about/policies/education-academic/e-2-student-services-&-support/e-2.5.pdf*

ACADEMIC PROGRESS POLICY

The Academic Progress Policy designed to enhance a learner's likelihood of success. Students should become familiar with the content of this policy, the policy is available in each School Administration Office, Registration, and on the College website *http://camosun.ca/about/policies/education-academic/e-1-programming-&-instruction/e-1.1.pdf*