COURSE SYLLABUS

COURSE TITLE: MATH-156-Math and Stats for Computing
CLASS SECTION: X01

TERM: 2025W

COURSE CREDITS: 3

DELIVERY METHOD(S): In-person lecture

Camosun College respectfully acknowledges that our campuses are situated on the territories of the Lək̓ʷəŋən (Songhees and Kosapsum) and WSÁNEĆ peoples. We honour their knowledge and welcome to all students who seek education here.

INSTRUCTOR DETAILS

NAME: Chedo Barone

EMAIL: baronec@camosun.ca

OFFICE: Lansdowne: Ewing 266, Interurban CBA 156

HOURS: Lansdowne: Tuesday 2:30 – 3:20, Friday 10:30-11:20. Interurban: Monday 1:30 – 2:20, Thursday 1:30 – 2:20, or 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

Students will learn mathematical and statistical concepts relevant to introductory computer programming for development of programming and data interpretation skills. Students will study binary numbers, logic, Boolean algebra, sequences and series, and asymptotic (Big-O) notation, counting techniques, introductory probability, descriptive statistics, and confidence intervals.

PREREQUISITE(S):

One of:

C in Math 12

C in Apprenticeship Math 12

C+ in Pre-calculus 11

C in MATH 097

C in MATH 107

C in MATH 115

C in MATH 139

C+ in MATH 073

C+ in MATH 077

CO-REQUISITE(S):

EQUIVALENCIES:

COURSE LEARNING OUTCOMES / OBJECTIVES

Upon successful completion of this course a student will be able to:

1. Show fluency with the numbering systems commonly used in computer science
    a. Count using binary, octal, and hexadecimal bases.
    b. Convert decimal numbers to and from binary, octal, and hexadecimal bases.
    c. Convert real numbers between binary, octal, and hexadecimal bases.
2. Use correct terminology, notation, and symbolic processes in logic and Boolean algebra to facilitate proper programming skills and logical thinking
    a. Use truth tables to define the logical connectives "and", "or", and "not".
    b. Complete truth tables and use the laws of logic to simplify logical and Boolean expressions and prove equivalence.
    c. Use the conditional and related logical forms to translate English expressions into logical symbols and analyze conditional and biconditional propositions.
3. Use sequences and series to solve applied problems used in programming
    a. Solve problems involving general and recursive forms for sequences, including the arithmetic and geometric cases.
    b. Evaluate sums for arithmetic and geometric series.
4. Use asymptotic (Big-O) notation to describe the response of various types of computer algorithms to changes in input size
    a. Sketch graphs of linear, polynomial, exponential and logarithmic functions.
    b. Rank computer algorithms for efficiency based on their Big-O complexity.
5. Use probability theory to solve applied problems
    a. Use counting techniques to solve applied problems.
    b. Calculate probabilities using simple events, counting techniques, and the properties of probability.
    c. Perform calculations involving the Normal distribution.
6. Organize, summarize, display, and interpret data in a meaningful way using descriptive statistical techniques
    a. Describe a data set numerically by way of the mean, median, and standard deviation.
    b. Interpret histograms and other graphical displays of data sets.
    c. Make predictions about the distribution of a data set using the Empirical Rule and Tchebyshev's Theorem.
7. Use inferential statistical techniques to make predictions about populations

a. Discuss issues associated with collecting and interpreting data from sample surveys.
b. For large samples, calculate and interpret confidence intervals for population means.
c. Determine appropriate sample sizes.

8. Identify and articulate issues regarding the use and misuse of statistics in society, to gain an awareness of proper uses of statistics in the workplace

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

Calculator - Only ordinary scientific calculators (non-graphing, non-programmable) are permitted. The use of other electronic devices such as cell phones, MP3 players, iPods, electronic translators, etc., during exams is not allowed. During exams, you cannot share calculators between students.

Texts - All course materials are online and available on D2L.

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
Weeks 1 to 2	Chapter 1: Binary, Octal, and Hexadecimal
Weeks 2 to 5	Chapter 2: Logic
Weeks 5 to 6	Chapter 3: Sequences and Series
Week 7	Reading Break: No lectures
Week 8	Chapter 4: Big O Notation and Algorithmic Complexity
Weeks 8 to 9	Chapter 5: Describing Data with Graphs
Weeks 9 to 10	Chapter 6: Describing Data with Numbers
Weeks 10 to 11	Chapter 7: Producing Data
Weeks 11 to 12	Chapter 8: Intro to Probability
Weeks 12 to 13	Chapter 9: Sampling Distributions
Weeks 13 to 14	Chapter 10: Confidence Intervals

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 noticed is required. Deadlines can be reviewed on the CAL exams page. https://camosun.ca/services/academic-supports/accessible-learning/academic-accommodations-exams

EVALUATION OF LEARNING

DESCRIPTION	WEIGHTING
Best 3 out of 4 tests (each test is 20% each)	60%
Online WeBWorK homework assignments	5%
Final exam	35%
TOTAL	100%

COURSE GUIDELINES & EXPECTATIONS

Tests: There will be four term tests. The first time a student misses a test for any reason, then that will be your "drop" test. No documentation is required for the first absence. Further absences will be treated on a case-by-case basis, and it is the student's responsibility to contact the instructor within a reasonable amount of time to explain the further absence. ***If*** that further absence is excused, the weight of the missed test will be transferred to the final exam.

The projected test dates are:

- Wednesday January 29 (Week 4)
- Wednesday February 12 (Week 6)
- Wednesday March 5 (Week 9)
- Wednesday April 2 (Week 13)

I will announce in class, and post on D2L, the coverage for each test one week before the test date.

Weekly WeBWorK Assignments: The lowest assignment grade will be dropped when calculating the average of your WeBWorK assignments. This allows a student to miss one assignment for any reason, including illness, without penalty. Each student can also ask for a week's extension on one assignment for any reason, no questions asked. Otherwise, late submissions will not be accepted. ***In order to get a full understanding of the course materials, the online assignments will not be enough. Please also work through the practice tests and/or textbook questions.***

Final Exam: The final exam will cover the entire course and will be 3 hours long, and will be scheduled during the Final Exam Period of April 14 - 25. As stated in the current college calendar, "students are expected to write tests and final examinations at the scheduled time" Exceptions will only be considered due to emergency circumstances as outlined in the calendar. Holidays or scheduled flights are not considered to be emergencies.

Collaboration: Student are encouraged to collaborate (work together) on assignments and to consult the Math Lab tutor and/or the instructor when stuck. However, you must be prepared to answer similar questions on your own for the tests, so it is vital that you yourself understand all of the assigned questions and work that you turn in.

Academic Integrity: 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. The course website has a link to the handout on the About page. It is your responsibility to become familiar with the contents of the document and the college policies it references.

SCHOOL OR DEPARTMENTAL INFORMATION

Interurban Math Lab (TEC 142)
Services: Individual free tutoring and study space
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

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 camosun.ca/services.

Support Service	Website
Academic Advising	camosun.ca/services/academic-supports/academic-advising
Accessible Learning	camosun.ca/services/academic-supports/accessible-learning
Counselling	camosun.ca/services/health-and-wellness/counselling-centre
Career Services	camosun.ca/services/co-operative-education-and-career-services
Financial Aid and Awards	camosun.ca/registration-records/financial-aid-awards
Help Centres (Math/English/Science)	camosun.ca/services/academic-supports/help-centres
Indigenous Student Support	camosun.ca/programs-courses/iecc/indigenous-student-services
International Student Support	camosun.ca/international
Learning Skills	camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills
Library	camosun.ca/services/library

Support Service	Website
Office of Student Support	camosun.ca/services/office-student-support
Ombudsperson	camosun.ca/services/ombudsperson
Registration	camosun.ca/registration-records/registration
Technology Support	camosun.ca/services/its
Writing Centre	camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills

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 Integrity

Students are expected to comply with all College policy regarding academic integrity; which is about honest and ethical behaviour in your education journey. The following guide is designed to help you understand your responsibilities: https://camosun.libguides.com/academicintegrity/welcome
Please visit https://camosun.ca/sites/default/files/2021-05/e-1.13.pdf for Camosun's Academic Integrity policy and details for addressing and resolving matters of academic misconduct.

Academic Accommodations for Students with Disabilities

Camosun College is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging appropriate academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a documented disability and think you may need accommodations, you are strongly encouraged to contact the Centre for Accessible Learning (CAL) and register as early as possible. Please visit the CAL website for more information about the process of registering with CAL, including important deadlines: https://camosun.ca/cal

Academic Progress

Please visit https://camosun.ca/sites/default/files/2023-02/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 https://camosun.ca/sites/default/files/2021-05/e-2.2.pdf for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit https://camosun.ca/registration-records/tuition-fees#deadlines.

Grading Policy

Please visit https://camosun.ca/sites/default/files/2021-05/e-1.5.pdf for further details about grading.

Grade Review and Appeals

Please visit https://camosun.ca/sites/default/files/2021-05/e-1.14.pdf for policy relating to requests for review and appeal of grades.

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 (see Medical/Compassionate Withdrawals policy). Please visit https://camosun.ca/services/forms#medical to learn more about the process involved in a medical/compassionate withdrawal.

Sexual Violence

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 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 Policy: https://camosun.ca/sites/default/files/2021-05/e-2.9.pdf and camosun.ca/services/sexual-violence-support-and-education.

To contact the Office of Student Support: oss@camosun.ca or by phone: 250-370-3046 or 250-370-3841

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 https://camosun.ca/sites/default/files/2021-05/e-2.5.pdf to understand the College's expectations of academic integrity and student behavioural conduct.

Looking for other policies?

The full suite of College policies and directives can be found here: https://camosun.ca/about/camosun-college-policies-and-directives

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.