

COURSE SYLLABUS



COURSE TITLE: MATH-156-Math and Stats for Computing

CLASS SECTION: X02

TERM: 2024F

COURSE CREDITS: 3

DELIVERY METHOD(S): Face-to-Face

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

INSTRUCTOR DETAILS

NAME: Dr. Torsten Schoeneberg

EMAIL: schoenebergt@camosun.ca

OFFICE: LACC 235

HOURS: Tuesdays 9.30-10.20 and 13.30-14.20

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:

Show fluency with the numbering systems commonly used in computer science

Count using binary, octal, and hexadecimal bases.

Convert decimal numbers to and from binary, octal, and hexadecimal bases.

Convert real numbers between binary, octal, and hexadecimal bases.

Use correct terminology, notation, and symbolic processes in logic and Boolean algebra to facilitate proper programming skills and logical thinking

Use truth tables to define the logical connectives "and", "or", and "not".

Complete truth tables and use the laws of logic to simplify logical and Boolean expressions and prove equivalence.

Use the conditional and related logical forms to translate English expressions into logical symbols and analyze conditional and biconditional propositions.

Use sequences and series to solve applied problems used in programming

Solve problems involving general and recursive forms for sequences, including the arithmetic and geometric cases.

Evaluate sums for arithmetic and geometric series.

Use asymptotic (Big-O) notation to describe the response of various types of computer algorithms to changes in input size

Sketch graphs of linear, polynomial, exponential and logarithmic functions.

Rank computer algorithms for efficiency based on their Big-O complexity.

Use probability theory to solve applied problems

Use counting techniques to solve applied problems.

Calculate probabilities using simple events, counting techniques, and the properties of probability.

Perform calculations involving the Normal distribution.

Organize, summarize, display, and interpret data in a meaningful way using descriptive statistical techniques

Describe a data set numerically by way of the mean, median, and standard deviation.

Interpret histograms and other graphical displays of data sets.

Make predictions about the distribution of a data set using the Empirical Rule and Tchebyshev's Theorem.

Use inferential statistical techniques to make predictions about populations

Discuss issues associated with collecting and interpreting data from sample surveys.

For large samples, calculate and interpret confidence intervals for population means.

Determine appropriate sample sizes.

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 the course website 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 | OTHER NOTES |
|--------------------|----------------------|-----------------------------|
| Weeks 1--2 | Chapter 1 | |
| Thu Sep 19 | Test 1 | |
| Weeks 3--6 | Chapters 2--4 | |
| Thu Oct 10 | Test 2 | before Thanksgiving weekend |
| Weeks 7--10 | Chapters 5--7 | |
| Thu Nov 07 | Test 3 | before Remembrance Day WE |
| Weeks 11--13 | Chapters 8--10 | |
| Thu Nov 28 | Test 4 | |
| Week 14 | Review | Dec 6 last day of classes |
| Dec. 9 -- 17 | Final Exam, date TBD | |

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](https://camosun.ca/services/academic-supports/accessible-learning/academic-accommodations-exams). <https://camosun.ca/services/academic-supports/accessible-learning/academic-accommodations-exams>

EVALUATION OF LEARNING

| DESCRIPTION | WEIGHTING |
|---|--------------|
| Midterm Tests (best 3 out of 4) | 60% |
| Homework Assignments | 5% |
| Final Exam (180 minutes, comprehensive) | 35% |
| | TOTAL |
| | 100% |

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.

<https://camosun.ca/sites/default/files/2021-05/e-1.14.pdf>

COURSE GUIDELINES & EXPECTATIONS

This class covers a variety of topics from mathematics and statistics that are useful in one way or another for anyone in computer sciences. As with every subject, one only truly learns it by practice, so students are strongly encouraged to look out for exercises and practice questions as recommended in class or on D2L.

Students 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.

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

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. 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 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 |
| 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.

