



**CAMOSUN COLLEGE**  
**School of Arts & Science**  
**Department of Mathematics & Statistics**

**MATH-155-X01**  
**Applied Math for Computing**  
**Winter 2020**

**COURSE OUTLINE**

---

The course description is online @ <http://camosun.ca/learn/calendar/current/web/math.html>

$\Omega$  Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

---

**1. Instructor Information**

<b>(a) Instructor</b>	Patricia (Pat) Wrean
<b>(b) Office hours</b>	M, T 1:30 – 2:20 pm, W 2:00 – 2:50 pm, Th 1:00 – 1:20 pm, F 12:00 – 12:20 pm
<b>(c) Location</b>	CBA 153
<b>(d) Phone</b>	250-370-4542 <b>Alternative:</b> _____
<b>(e) E-mail</b>	wrean@camosun.bc.ca
<b>(f) Website</b>	http://wrean.ca/math155/

**2. Intended Learning Outcomes**

Upon completion of this course the 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 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 and explain recursive algorithms 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. Evaluate exponential and logarithmic expressions.
  - b. Sketch graphs of linear, polynomial, exponential and logarithmic functions.
  - c. Rank computer algorithms for efficiency based on their Big-O complexity.

**3. Required Materials**

- (a) Texts - All course materials are online and available at the course website.
- (b) 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.

#### 4. Course Content and Schedule

##### Binary, Octal, and Hexadecimal

- 1.1 Decimal and Octal
- 1.2 Binary and Hexadecimal
- 1.3 Converting from Decimal
- 1.4 Converting between Binary, Octal, and Hexadecimal

##### Logic

- 2.1 Introduction to Logic
- 2.2 Venn Diagrams
- 2.3 Logical Equivalence
- 2.4 Boolean Algebra
- 2.5 Laws of Logic
- 2.6 More Laws of Logic
- 2.7 The Conditional
- 2.8 The Biconditional

##### Sequences and Series

- 3.1 Introduction to Sequences and Series
- 3.2 Arithmetic Sequences and Series
- 3.3 Geometric Sequences and Series

##### Big O Notation and Algorithmic Complexity

- 4.1 Big O and Rates of Growth
- 4.2 Factorial and Exponential Growth
- 4.3 Logarithmic Growth

#### 5. Basis of Student Assessment (Weighting)

**Grade Calculation:** The final grade will be calculated according to the following breakdown:

Assignments:	5%
Tests:	45%
Final Exam:	50%

If your final exam grade is higher than your term work grade and your term work is 40% or higher, then your final exam grade will count as 100% of your final grade.

**Tests:** There will be two term tests. The first time a student misses a test for any reason, the weight of the missed test will be transferred to the final exam. No documentation is required for the first absence. For any further absences, documentation is required or a zero will be given. There are no make-up tests. Tentative test dates: Friday, January 24, and Friday, February 7.

**Final Exam:** The final exam will cover the entire course and will be 1 hour 50 minutes long, tentatively scheduled for the regular lecture block on Thursday, February 27, in the week after Reading Break. As stated in the current college calendar, "students are expected to write tests and final examinations at the scheduled time and place." Exceptions will only be considered due to emergency circumstances as outlined in the calendar. The calendar specifically states that "holidays or scheduled flights are not considered to be emergencies."

**Assignments:** The assignments are online. The lowest assignment grade will be dropped when calculating the average of your assignments. This allows a student to miss one assignment for any reason, including illness, without penalty.

**Late Policy:** The online assignments close on the due date and late online submissions will not be accepted.

**Collaboration Policy:** 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 and final exam, 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. Copies will be given to students during the first week of classes, and 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.

## 6. Grading System

- Standard Grading System (GPA)
- Competency Based Grading System

## 7. Recommended Materials to Assist Students to Succeed Throughout the Course

The Math Lab in Tech 142 is a drop-in centre with a tutor on staff (see hours posted on door) and study space for students working on math homework.

Students with disability-related academic barriers are encouraged to consult with the Centre for Accessible Learning (CAL) to see whether they are eligible for exam or in-class accommodations. The CAL website is <http://camosun.ca/services/accessible-learning/>.

## 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.

A. GRADING SYSTEMS <http://camosun.ca/about/policies/index.html>

The following two grading systems are used at Camosun College:

#### 1. Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

## 2. 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.

## B. 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/index.html> for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	<i>In progress:</i> A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.

## 9. Territorial Acknowledgement

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