



The VIU community acknowledges the Snuneymuxw, Quw'utsun, Tla'amin, Snaw-naw-as and Qualicum First Nation on whose traditional lands we teach, learn, research, live and share knowledge.

Course Outline

CSCI 260

Foundations of Computer Science (3 credits)

CSCI 320 S26N01 and N02

September 8, 2026 – December 15, 2026

Calendar Description

An examination of various methods of representing and manipulating data, including internal representation of data, stacks, queues, linked lists, trees and graphs. Analysis of algorithms will also be discussed extensively. (4:0:1)

Course Description

Data structures and algorithms are the foundation of computer science. Everything computers do is accomplished through the flow and storage of data, and sequences of operations on data. Even now, with AI systems “solving” problems in an internally generated (rather than human designed) way, the AI systems and the computers and software they run on are a result of data structures and algorithms that have been designed, analyzed, and proved correct by humans. Algorithms (and their accompanying data structures) is problem solving in the digital sphere, at the highest level of achievement: beautiful, correct, and efficient.

This course introduces the student to the practices of algorithm design and analysis. Analytic techniques are developed, including correctness proofs and Big-Oh complexity analysis.

THE ATTENDANCE POLICY:

Attendance in the lecture **will not be taken** beyond the second week of class. If there are waitlists, attendance will be taken in the first week and no-shows will be deregistered unless there is prior agreement of the instructor by email.

Students are responsible for receipt of announcements made in person in class. Students are responsible for material covered in class.

If you miss a test, details of your absence may be shared with the S&T Dean's Office where it will be confidentially tracked. The Dean, or their designate, may reach out to you for more information related to your absence and to connect you with an appropriate student resource in support of your academic success.

Delivery Mode

Face-to-face.

Contact hours

4 hours lecture & 1 hour lab/week

Prerequisites and Corequisites

Math 123, and min. "C" in CSCI 161.

Note: the computer language of the course is C++. Transferring students who are unfamiliar with C++ will need to transfer their programming knowledge to C++, including what may be new to them, such as the use of pointers and memory allocation. Transferring students should make an appointment with the instructor.

Proposed Schedule

Lecture: Mon, Wed, 2:30-4:00, Thu 4:30-5:30
Labs: Thu 9:00-10:00 (F26N01), 2:30-3:30 (F26N02)

Instructor Info

Instructor name:	Gara Pruesse
Instructor VIU email address:	Gara.Pruesse@viu.ca
Office Hours:	Mon 10:00-11:00
Office:	315-218

Learning Outcomes

By the end of this course students will have a working knowledge of:

- Big Oh notation; Big-Omega, Big-Theta.
- The Master Theorem
- Analysis of algorithms: straight-line code, loops, recursion, nested code structures
- Algorithm correctness; proofs of, using mathematical induction.
- Abstract Data Types
- Dictionary ADT
- Hashing

- Binary Search Trees and balancing techniques
- B-Trees
- Divide and Conquer Algorithms and their analysis
- Searching and sorting algorithms
- Graph representations
- Graph traversal algorithms: breadth-first and depth-first search
- Shortest paths algorithms: Dijkstra
- Dynamic Programming
- Greedy Algorithms
- Union-Find algorithms

Course Learning Materials

Textbook:

The following is a good text that covers the course topics and is inexpensive when purchased directly from Springer in electronic form:

[An Introduction to Data Structures and Algorithms | Springer Nature Link](#)

The following is a wikibook (free):

[Data Structures - Wikibooks, open books for an open world](#)

The following is an OpenTechBook (free):

[Open Data Structures - Open Tech Book](#)

Evaluation and Assessment

▪ Assignments

There will be approximately 10 assignments, some consisting of theory questions and some being laboratory submissions (programs we develop in the lab session). The total will be worth 15% of the final grade. Not all theory questions will be marked; the student is expected to learn by doing, and by studying the solutions provided; in this way the student becomes prepared for the questions on the supervised tests.

- Paper assignments will be accepted in person. Students may also hand in assignments in electronic form if they are **not** scans of handwritten work.

Scans of handwritten assignments will not be graded, but will be permitted as proof of completion by the deadline as long as the physical original is handed in on or before the first workday after the assignment is due.

Each assignment will have a specified due date, and any assignments handed in after the due date, within 24 hours, will have 10% penalty. After 24 hours, the assignment grade will be zero. The lowest assignment grade will be dropped from the calculated assignment mark.

- **Midterms**

There will be three midterms.

Midterm 1: Thu Oct 8 4:30-5:30 15%

Midterm 2: Thu Oct 29 4:30-5:30 15%

Midterm 3: Thu Nov 26 4:30-5:30 15%

- **Final Exam**

In addition, there will be a final exam worth 40 per percent. **A student must pass the final exam to pass the course.**

- **Policy on Re-Grading**

Any assignment, quiz, or examination grade may be appealed. The instructor reserves the right to re-grade the entire piece of work submitted on appeal, not necessarily just the component that the student believes is in error.

Note that a request for clarification does not, in itself, constitute an appeal. In fact, students are encouraged seek such clarification when they do not understand why they have been assigned a particular grade - this often results in a learning opportunity for both the student and the instructor.

Grades will be distributed as follows:

A+ >= 90.0	A >= 85.0	A- >= 80.0
B+ >= 76.0	B >= 72.0	B- >= 68.0
C+ >= 64.0	C >= 60.0	C- >= 55.0
D >= 50.0		F otherwise

Course not completed due to unofficial withdrawal: UW

An incomplete Grade form is required to support an "I" grade.

Resources

- [Department of Computer Science](#)
- [VIULearn](#) will not be used for this course; instead, visit [Gara's CSCI 260 Web page](#)
- [Library](#)
- [Academic Advising](#)
- [Writing Centre](#)
- [Math Learning Centre](#)
- [Services for Aboriginal Students](#)
- [Counseling Services](#)
- [Accessibility](#)
- [Registration](#)
- [VIU Students' Union](#)

Accessibility

Vancouver Island University recognizes its legal duty to provide educational opportunities that enable students with a documented disability to access courses, programs, facilities, and services.

The Policy and Procedural Guidelines apply to all students who have identified themselves to the institution as having a documented disability who are inquiring about, applying to, or registered in credit or non-credit courses in both on and off-campus programs.

- [Policy 32.02 - Services Available to Students with a Documented Disability](#)

Academic Integrity

Integrity in academic work is a central element of learning and is the basis of intellectual pursuits in any academic community. It is also your responsibility to abide by the Student Conduct Code and Student Academic Code of Conduct.

- [Academic Integrity](#)

About Academic Integrity

- DO talk to your classmates about problems, even Assignment problems
- DO work in groups at a whiteboard
- DO read published solutions to similar problems to get ideas
- DO feel free to help your classmates to understand, if asked



- DON'T have any materials produced by or contribute to by anyone else within eyesight when you construct *your* solution to submit. You *can* view textbooks and legitimate web materials while constructing your answer to assignment questions. Legitimate web materials do NOT include the products of any solution-generating process, such as online homework services or generative AI – any process that takes a homework/assignment question and constructs a bespoke answer to that question is forbidden for assignment questions. Furthermore, submitting any assignment or homework question to an AI process is a violation of the instructor's or the text author's intellectual property rights.
- The use of AI systems like ChatGPT is not only forbidden for assignment submissions, it is not recommended: such systems seem much better at generating plausible, but incorrect, answers than actual solutions, shifting your task from generating to recognizing a correct solution. Even if you manage to make such a determination successfully, without going through the thinking process yourself, you are likely to have considerable difficulty on the exams where you are on your own. Also, the instructor reserves the right to query students on their assignment submissions to assess their understanding of the solutions given.

Links University Policies, Standards, and Guidelines

- [University Policies](#)
- [Freedom of Information and Protection of Privacy](#)
- [Student Conduct and Care \(SCC\)](#)
- [Student Academic Code of Conduct](#)
- [Student Affairs](#)
- [Academic Regulations](#)
- [Equity, Diversity, and Inclusion \(EDI\)](#)