

**Guelph Collegiate Vocational Institute
Upper Grand District School Board**

Course Outline



Department: Math and Computer Science

Course Title: Computer Science

Course Type: University

Grade: 12

Course Code: ICS4U

Credit Value: 1.0

Department Head: Glen McMillan

Teachers: Luis Ribeiro

Teacher email: (not mandatory)

Date of Development: February 9th, 2016

Curriculum Document:

http://www.edu.gov.on.ca/eng/curriculum/secondary/computer10to12_2008.pdf

Course Prerequisites/Corequisites:

ICS3U

Course Description:

This course enables students to further develop knowledge and skills in computer science. Students will use Java as a vehicle for learning Object Oriented Programming principles. They will use modular design principles to create complex and fully documented programs, according to industry standards. Student teams will manage a large software development project, from planning through to project review. Students will also analyse algorithms for effectiveness as well as data structures.

Term Work (70% of the final mark)

Unit Title, Big Ideas, and Unit Culminating Tasks

Unit 1: Object Oriented Programming Part 1

- Introduction to object oriented programming principles
- Unit test

Unit 2: Object Oriented Programming Part 2

- Objects using objects, inheritance, and polymorphism
- Unit test and software project

Unit 3: Sorting Algorithms

- Analysing sorting algorithms and their efficiencies
- Unit test and software project

Unit 4: Data Structures

- Array lists and two-dimensional arrays
- Introducing Stacks, Queues, and Linked Lists
- Software project

Unit 5: Independent Project

- Project planning including time management and project management

Culminating Tasks/Exams (30% of the final mark)

Course Culminating Task/Exams and Description

Final Exam (30%)

Based on the range of students' learning needs, a selection from the strategies listed below may be utilized. Refer to [list of teaching and assessment strategies](#).

Teaching Strategies:

Guided practice is used frequently in this course. Students are given a lesson and then work independently for some time to apply what they have learned in different contexts. Student's can decide how they will implement what they have learned using their own preferences and unique ideas.

Assessment and evaluation strategies:

Quizzes, informal assignments, culminating software projects and unit tests will be used to assess what students are learning, and what they have learned.

Textbooks/Learning Resource Materials (align with Policy 603)

Fees for Learning Materials/Activities

| Learning Materials/Activities | Cost |
|-------------------------------|------|
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Please refer to the [GCVI Student Handbook](#) for our school policies on:

- academic integrity
- late and missed assignments