COMP 1500: Computing: Ideas and Innovation

Calendar description An introduction to the topics of Computer Science and problem solving. Students will learn concepts in computer programming. May not be used to fulfill computer science requirements in a Computer Science Honours, Major, General or Minor program. Not available to students who have previously obtained credit in, or are concurrently registered in, any 2000 level university Computer Science course.

Prerequisite There are no prerequisites for this course

Course Objectives The course covers fundamental topics that provide necessary skills and knowledge, with four modules that can be chosen from a library of topics to provide breadth. The fundamental topics cover problem-solving, programming in a syntactically-simple language, and theoretical Computer Science. The four modules will be chosen by the instructors for the course for the term, to cover four non-overlapping areas of Computer Science. They are designed to give students an understanding of some problems in that area, and how they relate to current developments in the field.

Example Outline

Week 1: Introduction to Computer Science
- Data & algorithms; Problem solving; State

Week 2: Programming in Scratch
- Instructions (blocks in Scratch), events, control structures; Classes and Objects; Variables

Weeks 3-4: Computer Graphics
- Cartesian and barycentric coordinates; RGB colour model; animation & physical models

Weeks 5-6: Software Engineering
- Designing a larger project; software reliability; automated testing

Weeks 7-8: Databases
- Relational Databases; indexing; searching; sorting

Week 9-10: Computer Networks
- Packets; routing; internet

Week 11: Analysis of Algorithms
- Analysis of algorithms; computational complexity; theory of computation

Week 12: Current issues in Computer Science