

Course Outline

Career and Technology Studies 20

Computer Science and IT Essentials



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By registering in Computer Science and IT Essentials 20 you are contracted to complete a minimum of three mandatory modules of study, where each module is worth one CTS high school credit. As an intermediate course, the required core modules are selected as prerequisites for any and all future Computer Science courses. These modules place a strong emphasis on the skills and attitudes necessary for future success. Additional modules are available subject to time, availability, and teacher recommendation.

Core Course Modules

CSE 2010: COMPUTER SCIENCE 2

Students explore hardware, software and processes at an intermediate level. Students extend their understanding of software development by learning how to layer modular programming approaches over structured programming techniques to improve the efficiency and robustness of algorithms and programs. They also are introduced to derived data types to provide them with data structures suitable for more demanding problems. Students add to their understanding of the hardware side of computer science by exploring a stylized von Neumann computer system at the machine level, and of the social side of computer science by examining some of the issues that have arisen from the implementation of computer technology.

***Prerequisite:** CSE1010: Computer Science 1, CSE1120: Structured Programming 2*

CSE 2110: PROCEDURAL PROGRAMMING 1

Students develop their understanding of the procedural programming paradigm. They move from a structured programming approach in which modules were handled through the use of program blocks to a more formal modular programming approach in which they are handled through subprograms. In the process, they also learn what types of problems are amenable to modular algorithms and programs

***Prerequisite:** CSE1120: Structured Programming 2*

CSE 2120: DATA STRUCTURES 1

Students learn how to design code and debug programs that use a set of data structures that can be used to handle lists of related data. Building on their knowledge of basic or primitive data types, they learn how to work with fundamental data structures such as the array and the record. As part of this process, they learn what types of problems benefit from the use of these types of data structures.

***Prerequisite:** CSE2110: Procedural Programming 1*

Additional Course Modules

Once all core course modules have been completed additional modules are available for completion. All CSE modules can be viewed at <https://education.alberta.ca/career-and-technology-studies/bit-cluster-businessadminfinanceit/>.

Assessment and Evaluation

Assessment varies for each module. A minimum of 50% is required for credit in the module and 65% is expected to advance to a higher level module. There is no cumulative final exam at the end of the semester. Your final report card mark will display each of the modules you have taken and the grade received. You will not be permitted to redo failed modules for a mark until the following semester or school year.

Python

While there are many programming languages that will meet the curricular objectives, Python is an open-source scripting language and has been chosen to help reduce the syntax complexities that arise while learning to program. The fundamentals that are introduced at this level are transferable to most programming languages.

Late 2008 Python 3 was released to the public, however it was not well received. Lack of backwards compatibility with Python 2.x as well as limited library support had Python supporting both platforms until 2010 when Python 2.x was declared end-of-life with version 2.7. There is still a lot of support for Python 2.x but Python 3 is the future of the language and will be the version used in class.

If you download Python on your personal computer, make sure you download the latest version of Python 3!

Computer Lab Use

As per the Student/Parent policy handbook all students are required to fill out a Rocky View Computer Use Form prior to gaining access to a school computer. Computer use must be appropriate and on task at all times.

There is **no** food or drink allowed around work stations. You are responsible for the table and computer you are logged into.

Cell phone and other electronic device use is to be kept to a minimum. Excessive use may result in disciplinary measures.