



COMPUTER TECHNOLOGY:

Computing Science Advanced Placement 10, 20, 30

OVERVIEW

These three courses are designed for you if you want to learn programming skills to prepare for the Advanced Placement Exam which is held in May. Most of the modules offered will be Programming in Java. There will be additional optional modules offered in C++, Python, Processing or Java at the Intermediate and Advanced level. Computing Science 30AP is now being recognized as a Science course at the University of Alberta, University of Calgary and University of Lethbridge. Students who pass the Advanced Placement Exam could also apply for credit in Computer Science 114 at the University of Alberta.

Computing Science 10AP (5 credits)

Prerequisite: Suggested 75% or better in Math 9 and/or Science 9.

Co-requisite: Registration in Math 10C

Computing Science 10AP is an introductory course in computing science. It is designed to provide a good introduction to computer studies, conventional computer science and Internet programming. It is the first of a series of three courses designed to prepare students for a career in computer science, computer engineering, or internet programming. This course sequence was designed for students who wish to pursue university level course work while in high school. The students are introduced to computer technology in general and to computer programming in particular. The main focus of the course is on programming with a concentration on structured programming practices in Java, Python, Processing and or C++. It is expected that students who choose to register in this course will write the AP exam.

- Computer Science 1
- Structured Programming 1
- Structured Programming 2
- Client-Side Scripting 1
- Procedural Programming 1

- CSE Project A

Students will also be introduced to Scratch Programming and Python by writing simple games.

Computing Science 20AP (5 credits)

Prerequisite: Suggested 75% average in Computing Science 10 AP modules

Co-requisite: Registration in Math 20-1 or Math 20-2

This AP course is our Intermediate Advanced Placement Computing Science course. Students continue their examination of computer science in general and of computer programming in particular. The course continues with object oriented design and programming. Students continue their work using Java and may move over and program in C++, Python and Processing. Students may choose to write the Computer Science A Exam in May. We will do 3 major labs to prepare for the AP Exam – those being a Siri Artificial Intelligence application, Image Morphing program and the Card Game 11. Resources and time permitting, students will work with a game engine scripting language to edit or author simple games using Leap Motion or Oculus Rift.

- Computer Science 2
- Object Oriented Programming 1
- Data Structures 1
- Object Oriented Programming 2
- Project B
- Second Language Programming 2

Computing Science 30AP (5 credits)

Prerequisite: Suggested 75% average in Computing Science 20 AP modules

Co-requisite: Registration in Math 30-1 or Math 30-2

Computing Science 30AP is our senior Advanced Placement computer science course. It is a course designed to provide a good grounding in Object Oriented Programming and an introduction to dynamic data structures. It covers material usually presented in a first or second semester university course. It is the third course of our accelerated AP courses designed for elite students planning a career in computer science, computer engineering, information technology, the physical sciences or engineering. It has been specifically designed for students who want to fast track their computer studies and work at either the university or technical college level. The course concentrates on object oriented programming and preparation for the Advanced Placement exam. Depending on post-secondary plans, students will gradually concentrate on either C++, Python or Java. The intention is to have students work in the programming environment they will use at the post-secondary level. In keeping with our "learn by doing" approach to programming, most work will be in the form of projects. Approximately 85% of class time is devoted to "hands on" work with the computer. Postsecondary institutions,

including the University of Alberta, University of Calgary and University of Lethbridge are recognizing Alberta Education's Computer Science advanced courses on par with Physics 30, Biology 30 and Chemistry 30 for admission purposes to those institutions.

- Computer Science 3
- Iterative Algorithm 1
- Recursive Algorithm 1
- Dynamic Data Structures
- Project D
- Files and File Structures
- Dynamic Data Structures 2

Students will also complete projects in Smart Phone applications, Oculus Rift, LeapMotion, Finch Robot and Kinect Programming.