



Introduction to Programming in the C and C++ Language – COMP 105

University Studies Program

Course Outline

COURSE IMPLEMENTATION DATE: Pre 1998
OUTLINE EFFECTIVE DATE: September 2020
COURSE OUTLINE REVIEW DATE: April 2025

GENERAL COURSE DESCRIPTION:

Covers the basic programming techniques of C and C++ languages with an introduction to structured programming and abstract data types.

Program Information: This course is an important foundation of many science programs including Physics, Chemistry, Mathematics, Computing Science, Engineering, and Astronomy.

Delivery: This course is delivered face-to-face.

COTR Credits: 3

Hours for this course: 90 hours

Typical Structure of Instructional Hours:

Instructional Activity	Duration
Lecture Hours	45
Seminars / Tutorials	
Laboratory / Studio Hours	45
Practicum / Field Experience Hours	
Other Contact Hours	
Total	90

Practicum Hours (if applicable):

Type of Practicum	Duration
On-the-job Experience	N/A
Formal Work Experience	N/A
Other	N/A
Total	

Course Outline Author or Contact:

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Signature

APPROVAL SIGNATURES:

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Department Head Signature

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EDCO

Valid from: September 2020 – April 2025

Education Council Approval Date

COURSE PREREQUISITES AND TRANSFER CREDIT:

Prerequisites: Minimum 65% in either MATH 090, Foundations of Math 12, Pre-Calculus 12, Applications of Math 12, Principles of Math 12 or equivalent. It is recommended that students have programmed in some programming language before.

Corequisites: It is recommended that the student be enrolled in MATH 103/104, or MATH 101/102

Flexible Assessment (FA):

Credit can be awarded for this course through FA Yes No

Learners may request formal recognition for flexible assessment at the College of the Rockies through one or more of the following processes: External Evaluation, Worksite Assessment, Demonstration, Standardized Test, Self-assessment, Interview, Products/Portfolio, Challenge Exam. Contact an Education Advisor for more information.

Transfer Credit: For transfer information within British Columbia, Alberta and other institutions, please visit <http://www.cotr.bc.ca/Transfer>.

Students should also contact an academic advisor at the institution where they want transfer credit.

Prior Course Number: N/A

Date changed: _____

Textbooks and Required Resources:

Textbook selection varies by instructor and may change from year to year. At the Course Outline Effective Date the following textbooks were in use:

C++ Primer Plus, Stephen Prata, 6th edition, Pearson.

Please see the instructor's syllabus or check COTR's online text calculator <http://go.cotr.bc.ca/tuition/tCalc.asp> for a complete list of the currently required textbooks.

LEARNING OUTCOMES:

Upon the successful completion of this course, students will be able to

- understand the relationship between programming, hardware, and software;
- understand how computer language affects the operation of a computer;
- read, write, and debug C and C++ code;
- utilize top down computer programming, that is to break down a complex project into smaller, manageable subroutines for either individual or group work (demonstrate analytical thinking);
- apply good programming style;
- assemble small modules into a smoothly operating larger program, that is efficient, quick, user friendly, and easy to improve / repair (demonstrate synthetic thinking);
- conceive of a project, plan it, develop it, exercise quality control over it, document it, and see it to conclusion before a fixed deadline;
- incorporate social and group management skills in the development of a programming project as part of a group;
- apply mathematical knowledge to the design and implementation of computer algorithms;
- write programs to accomplish simple tasks;
- develop and maintain a computer programming portfolio, and a system of libraries and useful subroutines ;
- recognize and evaluate the wide variety of careers in the computer industry; and
- use programming skills to assist on entry level projects in the work place.

This course should help students with

- **interpersonal skills** – most commercial software development is done in large teams. A successful student should be able to work in groups more effectively.
 - **project management** – you will have managed a project from conception to final polished submission by course end.
 - **professional communication** – through documentation and explanations to others you will be learning clear, simple, and concise communication.
 - **research skills** -- will be enhanced by the search, editing, and adaptation of various algorithmic approaches to programming problems.
 - **personal and professional skills** -- will increase as you meet fixed deadlines, work under pressure, plan in detail, and finish and polish projects.
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COURSE TOPICS:

- **Introduction :**
introduction to computer hardware, software, and career opportunities
- **Using the integrated development environment**
- **The C Language:**
Specific syntax and limitations including data types, statements, operators, control structures, functions, arrays, pointers, strings, recursion
- **The Data Structures:**
developing structures; techniques for adding, deleting, and editing records; dynamic memory allocation and deletion; search and sorting algorithms; lists, linked lists, queues, stacks, indexing, and trees; input and output techniques; reports

See instructor’s syllabus for the detailed outline of weekly readings, activities and assignments.

EVALUATION AND ASSESSMENT:

Assignments	% Of Total Grade
Assignments	10%
Project: Open	20%
Lab Exams	45%
Final Exam	<u>25%</u>
Total	100%

Please see the instructor syllabus for specific classroom policies related to this course, such as details of evaluation, penalties for late assignments and use of electronic aids.

EXAM POLICY:

Students must attend all required scheduled exams that make up a final grade at the appointed time and place.

Individual instructors may accommodate for illness or personal crisis. Additional accommodation will not be made unless a written request is sent to and approved by the appropriate Department Head prior to the scheduled exam.

Any student who misses a scheduled exam without approval will be given a grade of “0” for the exam.

COURSE GRADE:

Course grades are assigned as follows:

Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F
Mark (Percent)	≥ 90	89-85	84-80	79-76	75-72	71-68	67-64	63-60	59-55	54-50	< 50

A grade of "D" grants credit, but may not be sufficient as a prerequisite for sequential courses.

ACADEMIC POLICIES:

See www.cotr.bc.ca/policies for general college policies related to course activities, including grade appeals, cheating and plagiarism.

COURSE CHANGES:

Information contained in course outlines is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational, employment and marketing needs. The instructor will endeavour to provide notice of changes to students as soon as possible. The instructor reserves the right to add or delete material from courses.