



## CIST-106 – Programming in C++

### Technology

**Effective Term & Year:** Fall 2024

**Course Outline Review Date:** 2029-03-01

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**Program Area:** Information Technology

#### **Description:**

This is an intense hands-on course on the most popular system and app development language: C++. Students (equipped with the basics of programming from CSTP 1105) go on to cover the basics of C++ and its powerful features. Topics include classes, object life cycle, memory management and smart pointers, program execution life-cycle, an introduction to the Standard Template Library (STL), the basics of exception handling, and finally the basics of threads and processes in C++.

The main goal of this course is for students to become fully familiar with the landscape of programming with C++ and to be comfortable using its common and modern features as well as to have the confidence to debug, optimize, and restructure existing code in a general application development context.

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#### **Program Information:**

This course is required for the first year of the Computer Information Systems Technology program.

**Delivery Methods:** Hybrid – On-campus (Face-to-Face) and Online

**Credit Type:** College of the Rockies Credits

**Credits:** 3

#### **Instructional Activity and Hours:**

Activity	Hours
Classroom, Directed Studies or Online Instruction	30
Seminar/Tutorials	
Laboratory/Studio	30
Practicum/Field Experience	
Co-op/Work Experience	
Other	
Total	60

### Course Requisites:

- Completed the following:
  - [CIST102](#) – Introduction to Programming (4)

### Flexible Assessment: Yes

Students are able to request formal recognition of their prior learning or experience outside the classroom. Challenge examination, portfolio-assisted assessment, or work-based assessment are used to identify, assess, and recognize prior skills, competencies, and knowledge to achieve course credit. Tuition fees apply, refer to [Policy 2.5.5 Prior Learning Assessment and Recognition \(PLAR\)](#) or contact an education advisor for more information.

### Course Transfer Credit:

For information about receiving transfer credit for courses taken at either British Columbia or Alberta institutions, please see <https://www.bctransferguide.ca/> or <https://transferalberta.alberta.ca> . For more transfer credit information, please visit <https://www.cotr.bc.ca/Transfer>

All requests for course transfer credit from institutions in British Columbia or elsewhere should go to the College of the Rockies Enrolment Services office.

### Textbook 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:

Resources available digitally through the online platform.

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

## Learning Outcomes:

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

- design reusable classes through inheritance and interfaces;
- design extensible classes through polymorphism;
- troubleshoot a defective program and debug it;
- develop programs using test driven development techniques;
- perform basic I/O(Input-Output) from/to a buffer or a file;
- design robust C++ programs using appropriate exception handling;
- use common algorithms and containers in C++ Standard Template Library;
- create programs that use multi-threading efficiently; and
- use template data types.

## Course Topics:

- Inheritance and interfaces
- Polymorphism
- Memory management
- Defective program troubleshooting
- Test driven development techniques
- Exception handling
- Standard template library
- Data storage and retrieval from files
- Multithreading programs
- Smart pointers

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

## Evaluation and Assessments

### Assessment Type: On-Campus (face-to-face)

Assessment Type	% of Total Grade
Assignments (1 assignment per week, except 2 weeks of exams)	50%
Participation	5%
Midterm Exam	20%
Final Exam	25%
Total	100%

## Grade Scheme

A+	A	A-	B+	B	B-	C+	C	C-	D	F
>=90	89-85	84-80	79-76	75-72	71-68	67-64	63-60	59-55	54-50	<50

**Evaluation Notes:** A grade of “D” grants credit, but may not be sufficient as a prerequisite for sequential courses.

### Evaluation Notes Comments:

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

### Exam Attendance:

Students must attend all scheduled exams at the appointed time and place. Instructors may approve an alternate exam to accommodate an illness or personal crisis. Department heads will consider other written requests. Any student who misses a scheduled exam without prior approval will receive a “0” on the exam.

### Academic Policies:

College of the Rockies policies related to courses can be found at <https://cotr.bc.ca/about-us/college-policies/> and include the following:

- Policy 2.1.4 Course Audit
- Policy 2.4.1 Credential Framework
- Policy 2.4.3 Students with Documented Disabilities
- Policy 2.4.4 Student Rights, Responsibilities and Conduct
- Policy 2.4.8 Academic Performance
- Policy 2.4.9 Student Feedback and Concerns
- Policy 2.4.11 Storage of Academic Works
- Policy 2.5.3 Student Appeal
- Policy 2.5.5 Prior Learning Assessment and Recognition (PLAR)

### Course Changes:

The College of the Rockies updates course outlines regularly to meet changing educational, employment and marketing needs. The instructor will notify students in writing of any updates to this outline during the semester. The instructor reserves the right to revise, add or delete material while meeting the learning outcomes of this course outlin

