COQUITLAM COLLEGE
Established 1982

COURSE OUTLINE

Last Revised: July 2015

COURSE INFORMATION

Course Title: Introduction to Computer Programming using C++ **Course Number:** CSCI 101 **Credits:** 4

Total Weeks: 14 (Fall, Spring)
12 (Summer)

Total Hours: 71.5

Course Level: ☒ First Year ☐ Second Year
☐ New ☐ Revised Course
☐ Replacement Course

Department: Computer Science **Department Head:** M. O'Connor **Former Course Code(s) and Number(s) (if applicable):** N/A

Pre-requisites (If there are no prerequisites, type NONE): PREC 12 or MATH 100 or MATH 120

Co-requisite Statement (List if applicable or type NONE): NONE

Precluded Courses: N/A

COURSE DESCRIPTION

This course is an introduction to computer programming using the C++ programming language. Students will be introduced to the principles of problem solving and algorithm design with emphasis on object-oriented programming. By the end of the course, students will be able to design, develop, test and document well-structured programs.

LEARNING OUTCOMES

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

- Cite some historical facts of computer science.
- Describe fundamental concepts behind computer science.
- Analyze problem specifications.
- Define algorithms to solve reasonably challenging problems.
- Construct C++ programs using object-oriented programming techniques.
- Trace the execution of C++ programs.
- Describe the basic techniques of the program design in general and object-oriented programming.
- Write C++ programs using object-oriented programming techniques.
- Describe different data types used in C++, declare, and define variables and constants.
- Use C++ decision structures and repetitive structures.
- Describe and demonstrate simple enumeration in a program.
- Describe the concept of a class, class constructor and object of a class.
- Demonstrate a C++ class, its methods (static, non-static, and overloaded) and describe how to create objects.
- Describe polymorphism and inheritance in general.
- Use pointers and dynamic memory management.
- Describe the notion of exception handling.
- Use exception handling.
- Describe the concept of I/O stream and demonstrate data read and write operations in a C++ program.

- Use elementary data structures such as arrays and lists.
- Implement fundamental algorithms such as the linear search and selection sort.
- Implement a recursive algorithm.
- Document a project.

INSTRUCTION AND GRADING

Instructional (Contact) Hours:

Type	Duration
Lecture	52
Seminars/Tutorials	
Laboratory	19.5
Field Experience	
Other (*specify):*	
Total	71.5

Grading System: Letter Grades ☒ Percentage ☐ Pass/Fail ☐ Satisfactory/Unsatisfactory ☐ Other ☐

Specify passing grade: 50%

Evaluation Activities and Weighting (total must equal 100%)

Assignments: 10% *Specify number of, variety, and nature of assignments:*	Lab Work: 5%	Participation: 5% *Specify nature of participation:*	Project: % *Specify nature of project:*
Quizzes/Test: 10%	Midterm Exam: 30%	Final Exam: 40%	Other: % *Specify:*

TEXT(S) AND RESOURCE MATERIALS

Provide a full reference for each text and/or resource material and include whether required/not required.

Problem Solving with C++. 9th Edition, Walter Savitch. Pearson, 2015 ISBN-10: 0133591743. ISBN-13:9780133591743.

COURSE TOPICS

List topics and sequence covered.

Week	**Topic**	**Chapter 1**
Week 1	Introduction to Computers, C++, and Computation	1-2
Week 2	Basic Computation	2
Week 3	Flow of control: branching and loops	3

Week 4	Abstraction and Functions	4
Week 5	Abstraction and Functions	5
Week 6	Streams	6
Week 7	Streams **MIDTERM EXAM**	6
Week 8	Objects and Classes	6
Week 9	Arrays	7
Week 10	Strings	8
Week 11	Pointers and Dynamic Arrays	9
Week 12	Defining Classes	10
Week 13	Dynamic data structures and Recursion	13-14
Week 14	**FINAL EXAM**	

NOTES

1. Students are required to follow all College policies. Policies are available on the website at: Coquitlam College Policies
2. To find out how this course transfers, visit the BC Transfer Guide at: bctransferguide.ca