

Effective: Spring 2023

COURSE INFORMATION

Course Title: Introduction to Computer Science & Programming II

Course Number: CSCI 125

Credits: 4

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

Total Hours: 65

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 equivalent and CSCI 120

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

Precluded Courses: N/A

COURSE DESCRIPTION

This course is a thorough introduction to computer science and computer programming, suitable for students with some computer science background. It is designed for students who will major in computing science or a related program. Students will learn fundamental concepts and terminology of computer programming and acquire basic programming skills in the Java programming language. Topics covered are: primitive and abstract data types, elementary data structures, fundamental algorithms, algorithm analysis, basic object-oriented programming and software design, specification and program correctness, and historical aspects of computing science.

LEARNING OUTCOMES

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

- Cite some historical facts of computer science and programming.
- Demonstrate how to choose primitive data types appropriately.
- Know the difference between primitive data types and reference data types.
- Describe and apply techniques to document programs.
- Use appropriate tools for software development
- Develop, test, and evaluate programs
- Use good and defensive programming style
- Demonstrate how to use control structures appropriately.
- Demonstrate how to use text files for input and output.
- Know how to construct safe programs.
- Explain and use simple abstract data types such as list, stack and queue.
- Demonstrate how to design and use classes.
- Demonstrate how to use modeling tools such as UML, for object-oriented design.
- Develop object-oriented programming solutions
- Know data structures from the Java Collections API such as arrays, lists and dictionaries.
- Demonstrate how to use single and multi-dimensional arrays.
- Know and analyze fundamental searching and sorting algorithms.
- Explain and apply the concepts of Object-Oriented Programming.
- Define and use recursive algorithms for problem solving.

INSTRUCTION AND GRADING

Instructional (Contact) Hours:

Type	Duration
Lecture	39
Seminars/Tutorials	
Laboratory	26
Field Experience	
Other (<i>specify</i>):	
Total	65

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

Specify passing grade: 50%

Evaluation Activities and Weighting (total must equal 100%)

Assignments: 5% <i>Review Questions: 3%</i> <i>Review Quizzes: 2%</i>	Lab Work: 15%	Participation: %	Projects: 15% <i>Midterm Project: 5%</i> <i>Final Project: 10%</i>
Quizzes/Test: %	Midterm Exams: 30% <i>Midterm 1: 15%</i> <i>Midterm 2: 15%</i>	Final Exam: 35%	Other: %

TEXT(S) AND RESOURCE MATERIALS

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

Tony Gaddis, Godfrey Muganda: Starting Out with Java: From Control Structures through Data Structures, 4th Edition. Pearson. 2019. ISBN 013478796X • 9780134787961.

COURSE TOPICS

List topics and sequence covered.

Week	Topic
Week 1	Introduction to Java, OOP, and Program Design
Week 2	Primitive data types and their operations
Week 3	Decision and loop control structures,
Week 4	File input and output
Week 5	Methods
Week 6	Midterm Exam 1 / Introduction to Classes and Objects, UML diagrams

Week 7	Introduction to Arrays and the ArrayList Class
Week 8	Sorting and Searching Algorithms, Algorithm Analysis
Week 9	More about Classes and Objects
Week 10	Midterm Exam 2 / Test Processing and Wrapper Classes
Week 11	Inheritance and Polymorphism
Week 12	Exceptions
Week 13	Recursion / Abstract Data Types
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

Last Reviewed: September 2024

Last Revised: January 2023