Capital University of Science and Technology

Department of Computer Science

CS1133 – Introduction to Programming

Course Title:	Introduction to Programming (CS1133)
Credit Hours:	3
Instructor:	
Textbook:	Introduction to Programming in C++ 8th Edition by D S Malik
Reference Book:	Starting Out with C++: From Control Structures through Objects, By Tony Gaddis, Publisher: Addison-Wesley; 8th edition
Web Reference:	https://www.w3schools.com/cpp/

Course Introduction:

This course is a mixture of diversified concepts and is the first course in computer science and software engineering. In the first part emphasize would be more on problem solving techniques, using basic algorithm notations like flow chart and pseudocode. While in second part language construct and elementary problem-solving using C++ as the programming tool will be emphasized. Visual C++ will be the environment used for this part, so that students have a foundation to build on later for object oriented and visual programming.

Course Objectives:

The objective of this course is to introduce students to the basic concepts of Computer Science and Programming. At the end of the term, the students are expected to be good at basic concepts in Computer Science and proficient in computer programming using imperative paradigm. The focus of the course will be on general programming principles/techniques, whereas C++ will be the tool and language to implement these concepts. Key procedural programming topics like variables, arrays, strings, functions, pointers/references will be covered in detail.

Course Learning Outcomes

At the end of this course, the students should be able to

CLO:1. Learn and Recognize syntax of different constructs of C++. (C1)

CLO:2. Anticipate output for C++ statements. (C2)

CLO:3. Learn C++ constructs to design solution for small scale computational problems. (C3)

CLO:4. Apply programming knowledge and design algorithms that solve small-to-moderate scale computational problems. (C3)

CLOs – PLOs Mapping:

	CLO:1	CLO:2	CLO:3	CLO:4
PLO:1 (Academic Education)				
PLO:2 (Knowledge for Solving Computing Problems)	√	√		
PLO:3 (Problem Analysis)			√	
PLO:4 (Design/Development of Solutions)				√
PLO:5 (Modern Tool Usage)				

Course Contents:

Week #	Contents	Lab Topic
Week 1	Introduction to computers, Parts of computer, description and bird eye view of working of different components, with their measuring units (capacity, speed etc). Various interfaces and peripherals.	MS WORD MS Power Point
	Introduction to software, types of software, purpose, need and working of OS, system software, drivers, and different application software.	
Week 2	Anatomy of C++ program and how the program is compiled and linked, escape sequences. Data types, signed, unsigned variable, assign and display values	MS Excel
	Constant variables and data casting and sizes of data types. Operations, Arithmetic operators, Unary Operators, assignment operators	
Week3	Expressions / mixed expressions and casting (Implicit and Explicit casting)	Escape Sequence and Variables arithmetic
	Control structures. If, if-else	
Week 4	multiple If-else-if, nested if and Logical operators	Control structures (Selection) and Relational operators
	Switch statement, Ternary operators	
Week 5	for loop,	Nested If-else and Switch
	While loop, do while loop	
Week 6	nested loops+	Loops
	Practice Questions using nested loop	
Week 7	Arrays (Single Dimension),	Nested loop
	Char Arrays (NULL terminated Single Dimension character),	
Week 8	Sorting, searching and MIN MAX	Single Array and MID TERM
	Course Revision	
Week 9	Mid Discussion and Intro to Multi-dimension arrays	Sorting/Searching
	Examples of Multi-dimension arrays	

Week 10	Introduction to Functions, scope and lifetime of variables, local, global and static variables Function Parameters (Pass by Value and Pass by reference)	Multi-Dimensional Arrays
Week 11	Functions and arrays. Introduction to Strings	Introduction to Functions and pass by value/pass by reference
Week 12	Strings Manipulation and Functions Introduction to Pointers, pointers referencing, indirection	Functions and arrays
Week 13	Pointer arithmetic, Pointer and functions Constant Pointers & Constant Data, Void Pointers Class Test	Strings
Week 14	Introduction to Structures, DOT operator, accessing structure data member. Making an array of structures	Pointers
Week 15	Passing structures and array of structures to functions by pointers Examples of Structures	Structures and Functions
Week 16	Class Test Complete Course Revision	Dreamweaver and FINAL Exam

Grading Policy:

S.No	Grading	% of Total Marks
1	Assignments	10
2	Quizzes	30
4	Mid-term Exam	20
5	Final Exam	40
	Total	**100**