Course Title	Programming with C and C++	ISCED Code	0741-124
		Course Code	CSE 124
Course Type	GED	Course Status	Theory
Course Hour	3.0 Hr./Week	Credit Value	3.0
Prerequisite	Fundamentals of Computer	Total Marks	100

Course Description

Programming with C and C++ is a compulsory course for the students of the B.Sc. (Honours) program. The course carries **3.0 credits** and **42 hours** of effective class teaching. Teaching techniques consist of traditional lectures, which include question-answer sessions and discussions, tests/quizzes over lecture materials, etc. Prerequisite for taking this course is the successful completion of **Fundamentals of Computer.**

Rationale

Computer science is all about solving problems with computers. The problems we want to solve can come from any real-world problem or perhaps even the abstract world. Computer programming is at the heart of computer science. It is the implementation portion of software development, application development and software engineering efforts, transforming ideas and theories into actual, working solutions. The primary purpose of this course is to teach students the basics of pure programming and problem-solving. This course provides students with a comprehensive study of the C and C++ programming languages. The course emphasizes problem-solving and empirical skills through the process of designing, implementing, and executing C and C++ programs.

Course Objectives

The main objectives of **Programming with C and C++** is to understand the complete knowledge of C programming and gain knowledge and experience about structured programming. It helps students to develop programming skills to solve different problems. The course further prepares students to understand and implement various concepts and structures of C and C++ programming languages.

Course Learning Outcomes (CLOs)

On satisfying the requirements and successful completion of this course, students will have the knowledge and skills to-

CLO1	Demonstrate problem-solving skills by developing and implementing algorithms to solve problems.
CLO2	Analyze the basic programming concepts: constants, variables, expressions, data types, and operators in formulation of mathematical models.
CLO3	Evaluate the design programs involving decision structures, loops and functions, array, string, and pointers.
CLO4	Assemble the design of the program with union, structures and manipulate basic data files.

Course Contents

	Course Contents	Hours	CLOs
1.	**Problem Solving Techniques:** Problem analysis, Algorithm, Flowchart, Debugging, Coding and Documentation.	15 Hrs.	CLO1, CLO2, CLO3, CLO4
2.	**Structured Programming Language:** Overview of C, Data types, Variables, Constants, Operators, Expressions, Control structures, Functions and program structure, Parameter passing conventions, Scope rules and Storage classes, Recursion, Header files, Pre-processor, Pointers and arrays, Strings, Multidimensional array,	27 Hrs.	CLO1, CLO2, CLO 3, CLO4

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	User defined data types, Structures, Unions, Enumerations, Input and Output, Standard input and output, Formatted input and output, File access, Variable length argument list, Command line parameters, Error Handling, Graphics, Linking, and Library functions.		

Alignment of CLOs VS PLOs

Mapping of Course Learning Outcomes (CLOs) to Program Learning Outcomes (PLOs)

PLOs/ CLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CLO1	♦	-	♦	-	-	♦	-	♦	-	-	♦	-
CLO2	♦	♦	-	♦	-	♦	♦	♦	-	♦	-	♦
CLO3	♦	-	♦	-	-	♦	-	-	-	-	♦	-
CLO4	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦

♦: Aligned -: Not-aligned

Learning Materials

Recommended Readings

i.	**Ritchie D.**, The C programming language. *Prentice Hall*, 1988.
ii.	**Balagurusamy E.**, Programming in ANSI C, *McGraw Hill*, 2017.
iii.	**Herbert S.**, Teach Yourself C, *Osborne McGraw Hill*, 1990.

Supplementary Readings

i.	**Stephen G. K.**, Programming in C, *Addison-Wesley Professional*, 2014.
ii.	**Dromey R.G.**, How to solve it using Computer, *Prentice Hall*, 1985.
iii.	**King K. N.**, C Programming- A Modern Approach, *W. W. Norton*, 2008.

Teaching-Learning and Assessment Strategy

Mapping of Course Learning Outcomes (CLOs) with the Teaching-Learning & Assessment Strategy

CLOs	Teaching-Learning Strategy	Assessment Strategy
CLO1	Lecturing and Student Activity	Quiz/ Homework (Formative)
CLO2	Lecturing and Discussion	Midterm (Summative)
CLO3	Lecturing and Discussion	Assignment (Formative) and Midterm (Summative)
CLO4	Lecturing and Visual Presentation	Midterm and Final Exam (Summative)

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