ARSD College, University of Delhi

Model Course Handout/Lesson Plan

Course Name : B.Sc. (Hons.) Computer Science						
Semester	**Course Code**	**Course Title**	**Lecture (L)**	**Tutorial (T)**	**Practical (P)**	**Credit (C)**
I	BHCS01	Programming Fundamentals using C++ Discipline Specific Core Course - (DSC)	4			4
Teacher/Instructor(s)		Dr. Parul Jain				
Session		2021-22				

Course Objective:

This course is designed to develop structured as well as object-oriented programming skills using C++ programming language. The course not only focuses on basic C++ constructs but also covers object-oriented programming features in-depth, namely Encapsulation, Abstraction, Inheritance and Polymorphism for writing efficient codes.

Course Learning Outcomes:

On successful completion of the course, students will be able to:
1. Explain significance of object oriented paradigm.
2. Solve programming problems using object oriented features.
3. Handle external files as well as exceptions.
4. Reuse classes to create new classes.
5. Handle exceptions in programs.

Lesson Plan:

Week	Contents	Contact Hours
1	Introduction to C++: Overview of Procedural Programming and Object-Oriented Programming, Using main () function, Header Files, Compiling and Executing Simple Programs in C++	4
2	Data types, Variables , Operators, Expressions, Arrays, Keywords, Naming Convention, Type Casting, Input-output statements	4
3	Decision making constructs (if, switch), Looping (for, while,	4

	do…while)	
4	Functions, Command Line Arguments/Parameters	4
5-9	Overview of Abstraction, Encapsulation, Inheritance, and Polymorphism. Creating Classes and objects, Modifiers and Access Control, Constructors, Inheritance (Single and multilevel), Polymorphism (Function Overloading, Operator Overloading, Function Overriding)	20
10-12	Static and dynamic memory allocation, Pointer variables, Reference Variables, Pointers vs. References, Runtime polymorphism using pointers and references	12
13-15	Exception and File Handling: Using try, catch, throw, throws and finally; Nested try, creating user defined exceptions, File I/O Basics, File Operations	12

Evaluation Scheme:

No.	Component	Duration	Marks
1.	Internal Assessment • Quiz • Class Test • Attendance • Assignment		25
2.	End Semester Examination	3 hr	75

Unit	Contents
I	**Introduction to C++:** Overview of Procedural Programming and Object-Oriented Programming, Using main () function, Header Files, Compiling and Executing Simple Programs in C++.
II	**Programming Fundamentals:** Data types, Variables, Operators, Expressions, Arrays, Keywords, Naming Convention, Decision making constructs (if, switch), Looping (for, while, do…while), Type Casting, Input-output statements, Functions, Command Line Arguments/Parameters.
III	**Object Oriented Programming:** Overview of Abstraction, Encapsulation, Inheritance, and Polymorphism. Creating Classes and objects, Modifiers and Access Control, Constructors, Implementation of Inheritance (Single and multilevel), Implementation of Polymorphism (Function Overloading and Operator Overloading, Function Overriding).
IV	**Pointers and References:** Static and dynamic memory allocation, Pointer and Reference Variables, Pointers vs. References, Implementing Runtime polymorphism using pointers and references.
V	**Exception and File Handling:** Using try, catch, throw, throws and finally;

	Nested try, creating user defined exceptions, File I/O Basics, File Operations.
	Suggested Books
Sl. No.	**Name of Authors/Books/Publishers**
1.	Forouzan & Gilbert (2012). Computer Science: A Structured Approach Using C++. Cengage Learning.
2.	Schildt, H. (2003). C++: The Complete Reference. 4th edition. Tata McGraw-Hill.
3.	Balaguruswamy, E. (2017). Object Oriented Programming with C++ (7th ed.). McGraw Hill Education.
4.	Kanetkar, Y. P. (2015). Let us C++ .2nd edition. BPB Publishers.
5.	Prata, S. (2015). C++ Primer Plus 6th edition. Pearson Education India.
6.	Stroustrup, B. (2013). The C++ Programming Language .4th Edition. Pearson Education.
Mode of Evaluation: Internal Assessment / End Semester Exam	

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