

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR
UNIVERSITY, SOLAPUR

SKILL DEVELOPMENT CENTRE



**Course Name: Certificate Course in C++
Programming**

Year- 2023

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Punyashlok Ahilyadevi Holkar Solapur University, Solapur

SKILL DEVELOPMENT CENTRE

“Certificate Course in: *Certificate Course in C++ Programming*”

Syllabus

Duration of course : 6 Month

Need of Course :

- 1. The course will give students to be proficient in C++, it is a popular and well practiced object oriented programming language.**
- 2. The course will enable students to gain knowledge of C++ for being a superset of C-basic programming language.**
- 3. The course will make students learn the programming environment of C++ programming.**
- 4. The students can have the example based learning experience of decision making, looping programming statements.**
- 5. The course will be a prerequisite for understanding the JAVA programming language.**

Employment and Entrepreneurship Opportunities From Course :

- 1 The student could be entitled to the role of programmer.**
- 2 The ability to be a course tutor to give insights into the subject.**
- 3 The ability to develop software through programming for subject marksheet generation, bill desk management etc.**
- 4 The ability to perform programming under an OOPS environment.**
- 5 The ability to understand higher level programming as JAVA.**

Tentative Fees : Rs. 5,000/-

Minimum Admission Eligibility for Student : 12th Pass

Teachers/ Tutors Minimum Qualification : M.Sc. (Comp Sci)/ MCA/ BE(CSE) /ME (CSE)

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SKILL DEVELOPMENT CENTRE

Syllabus Structure

Course Title : “Certificate Course in C++ Programming”

Course Duration: 6 Months

Name of Skill Course	Duration	Name of Paper	Paper	Hours Per Paper	Th.	Int.	Pract.	Credits
Certificate Course in	6 Months	Basic Programming in C++	I	45	80	20	0	3 Credits
		Practical Based on Paper I	II	45			100	3 Credits
		Mini Project	III	45			100	3 Credits
		Advanced Programming in C++	IV	45	80	20	0	3 Credits
Total				180	160	40	200	12 Credits

Abbreviations :

Th.- Theory Evaluation,

Int.- Internal Evaluation,

Pract.- Practical Evaluation.

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SKILL DEVELOPMENT CENTRE

Course Title : Certificate Course in C++ Programming

SYLLABUS Details

1)	Paper Title	Basic Programming in C++	
2)	Paper No	I	
3)	Objectives of Paper	1. This paper will let students understand the basic concepts of programming.	
		2. The student will be able to do programming using C++.	
		3. To enhance problem solving & logical thinking skills.	
		4. To offer students a broad understanding of basic technological trends.	
		5. Develop critical thinking and overall programming skill of OOPS.	
4)	Expected out comes from Paper	1. Understands fundamental terminologies related to Object Oriented Programming.	
		2. Gain hands-on experience in implementation and evaluation of programming.	
		3. Analyze and compare different programming algorithms to do program execution with much efficiency.	
		4. Apply conditional statements to solve a wide range of decision making problems.	
		5. Choice of proper programming environment for executing based on type of problem.	
5)	Content		
	Unite-1	Softwares - Application/System, POP (Procedure Oriented Programming) versus OOP (Object Oriented Programming), Basic concepts of OOP- Objects, Classes, Data Abstraction and Data Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing. Benefits of OOP, Object Oriented Language, Application of OOP.	10 Hour
	Unite-2	Introduction of C++, Application of C++, Simple C++ Program- Program Features, Comments, Output Operators, Iostream File, Namespace, Return Type of main (). More C++ Statements- Variable, Input Operator, Cascading I/O Operator, Example with Class	10 Hour

	Unite-3	Function Definition and Declaration, Arguments to a Function- Passing Arguments to a Function, Default Arguments, Constant Arguments, Calling Functions, Inline Functions, Scope Rules of Functions and Variables	10 Hour
	Unite-4	Definition and Declaration of a Class, Member Function Definition, Inside Class Definition, Class Definition Using Scope Resolution Operator (::), Declaration of Objects as Instances of a Class, Accessing Members From Object(S).	10 Hour
	Unite-5	Static Class Members-Static Data Member, Static Member Function, Friend Classes.	05 Hour
6)	Reference Book	<ol style="list-style-type: none"> 1. Bjarne Stroustrup, The Design and Evolution of C++ (1st Edition) 2. Ulla Kirch-Prinz, A Complete Guide to Programming in C++ (1st Ed) 3. Josée Lajoie and Stanley B. Lippman C++ Primer (5th Edition) 4. John Smiley, Learn To Program With C++ (1st Edition) 5. Stephen Prata, C++ Primer Plus (6th Edition) 	

Paper	Name of Paper	Hours Per Paper	Int.	Pract.	Credits
II	Practical Based on Paper I & IV	45	–	100	3 Credits
*The practical based on the concept of Paper I and IV is to be exercised.					
III	Mini Project	45	–	100	3 Credits
*The Mini Project would be carried by student to consider any real time system to be computerized using the basic and advanced concept of C++ (Object Oriented Programming System)					

Course Title : Certificate Course in C++ Programming

SYLLABUS Details

1)	Paper Title	Advanced Programming in C++	
2)	Paper No	IV	
3)	Objectives of Paper	1. To enable student mapping of real life problems in system design.	
		2. To develop models using the programming environment of OOPS.	
		3. To design systems with kind of user class and object programming.	
		4. The student to understand advanced C++ concepts in depth.	
		5. To make students learn skill to gain concept functionality with example based learning.	
4)	Expected out comes from Paper	1. Understands advanced terminologies related to Object Oriented Programming System (OOPS).	
		2. Students get hands-on experience in implementing advanced programming exercises.	
		3. Student will be able to master programming skills through concept learning side by side practical experiential learning.	
		4. Apply inter-relating classes and objects to solve a object oriented programming related concepts.	
		5. Students will be able to plan and do mini projects using the OOPS concept.	
5)	Content		
	Unite-1	Declaration And Definition Of A Constructor, Type of Constructor, Overloaded Constructors, Copy Constructor, Dynamic Initialization Of Objects, Constructors And Primitive Types, Constructor With Default Arguments, Special Characteristics of Constructors, Declaration And Definition of A Destructor, Special Characteristics of Destructors, Declaration and Definition of a Overloading, Assignment And Initialisation Type Conversions.	10 Hour
	Unite-2	Concept of Inheritance, Base Class And Derived Class, Single Inheritance, Private Inheritance, Public Inheritance, Protected Inheritance, Multiple Inheritance, Nested Classes. This Pointer, Virtual Functions, Polymorphism, Dynamic Polymorphism, Static And Dynamic Binding.	10 Hour

	Unite-3	C++ streams, C++ streams classes, Unformatted I/O Operations, Formatted console I/O Operations, Managing output with manipulators, Design Our Own Manipulators	10 Hour
	Unite-4	File stream classes, Steps of file operations, Finding end of file, File opening modes, File pointers and manipulators, Sequential input and output operations, Error handling functions, Command Line argument	10 Hour
	Unite-5	Class templates, Multiple parameters in class templates, Function templates, Multiple parameters in function templates, Overloading of template functions, Member function templates, Non-type template arguments	05 Hour
6)	Reference Book	<ol style="list-style-type: none"> 1. E Balagurusamy, Object Oriented Programming in C++ (8th Ed.). 2. Ashok N. Kamthane, Object Oriented Programming with ANSI & Turbo C++ . 3. Bjarne Stroustrup, The C++ Programming Language (4th Edition) 4. Pooja Chawla, Introduction of OOP 5. Andrew Koenig, Barbara E. Moo, Accelerated C++: Practical Programming by Example. 6. Andrei Alexandrescu, Accelerated C++: Practical Programming by Example. 	