

Object-Oriented Programming

Programme Overview

Go beyond the basics of programming to understand object-oriented methodology, the approach to modular and reusable software systems. You will learn to:

- How to abstract a problem in an object oriented style
- Object oriented programming, basics to advanced level, using C++
- How to use the Standard Template Library (STL)

Course content

The topics covered in this course:

- Introduction to Object Oriented Programming
- Classes and Methods
- Polymorphism
- Inheritance
- Standard Library of C++

The detailed description is given below:

Topic 1: Practice Problems for Review of Basic Concepts

- Track your expertise level
- Track your knowledge base

Topic 2: Review of Pointers and Structures

- Brush up skills on Pointers and Structures
- Learn the behavioral nature of Pointers and Structures
- Recollect the relationship between pointers and structures

Topic 3: Review of File Processing

- Brush up skills on File processing
- Recall the functions to process data within files
- Refresh how to create and access binary file

Topic 4: Introduction to Object Oriented Programming Concepts, Classes and Methods

- Get to know the programming paradigm
- Learn to choose the best possible paradigm
- Know how to implement the program
- Learn to control access to members

Topic 5: Constructors, Operator Overloading, and Members

- Differentiate between Constructor and Destructor functions
- Learn to invoke constructors
- Know the different constructors
- Learn to customize operators
- Learn different classes and functions

Topic 6: Inheritance and Polymorphism

- Distinguish between Compositional and Inheritance based approaches
- Learn the access control for different inheritances
- Know more about Objects of base and derived classes
- Get to know polymorphism and abstract class
- Learn the usage of virtual function

Topic 7: Standard Template Library (STL) of C++

- Learn inlined and non inlined member functions of C++ classes
- Know more about the C++ Standard Library
- Learn different Template classes
- Get a high-level view of useful modules in C++ Standard Library

Teaching Faculty

[Prof \(Retired\) Deepak B. Phatak](#), Dept. of CSE, IIT Bombay

[Prof Supratik Chakraborty](#), Dept. of CSE, IIT Bombay

Nagesh Karmali, Sr. Manager (Research), Dept. of CSE, IIT Bombay

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Duration and Venue

Registration Opens	July 1, 2020
Registration Ends	October 16, 2020
Course Starts	July 15, 2020
Course Ends	November 15, 2020
Total Duration	6 weeks

This course will be conducted in a self-paced mode, i.e. all the lecture videos, slides, reading materials, activities, and graded assignments will be released on when the course starts. This gives you the flexibility of progressing and completing the graded assignments at your own pace. However, but one would need to complete them before the course ends.

Who Should Attend

The course can be taken by any learner who wishes to enhance programming skills by abstracting a problem using OOP concepts. Knowledge of basic programming concepts, as covered in the ‘Programming Basics’ course is necessary.

Course Fee and Certification

The registration fee for the course is **Rs. 475/-**. However, register before **16 August 2020** for **Rs. 375/-** only to avail an early bird registration discount. Please note that the registration fee once paid is neither refundable nor adjustable under any circumstances.

Important payment instructions:

In case of a course fee transaction failure, the participant will get an auto generated mail with instructions for further process. Please go through the mail carefully. If the amount is already debited to your account, please do not make another payment. In case of a double payment (or more than once), please send a mail to dbpaccounts@cse.iitb.ac.in requesting for a refund. The participant will also have to check the following link for

his/her vendor creation in order to get a refund. IIT Bombay will not be able to process the refund (for any reason) if the vendor creation, as per IIT Bombay's requirement, is not completed by the participant. **Link**:- <https://portal.iitb.ac.in/vrp/index.jsp>

Honor Code Certificates will be issued on successful completion of the course based on the grading policy mentioned in the course. Please note that all certificates will be issued online. No hard copies will be given.

How to Apply

Enrollment will be strictly online, and no other mode of application will be entertained. The online registration for the course will start on **1 July 2020**. It will remain open till **16 October 2020**.

Registration process for the Program:

- Sign up using your valid email id on the website:
<https://www.it.iitb.ac.in/lakshya/signup.html>
- After verification, your account will be created
- Login on the website with the verified account
- Go to Announcements, select the program and register
- After successful registration, you will receive an automated email. Your name will be listed in the “**List of Participants page**”
- Thereafter register on IITBombayX site (<https://courses.iitbombayx.in/register>) using the same email id to access the course content

Note

The course content is released under Open Source License. All participants must agree that the content contributed by them in any form, (assignments, questions, etc.) would be released under Open Source Licence, by accepting the terms mentioned under ‘No Objection Certificate’. All contributors will be acknowledged.