



# SHETTY INSTITUTE OF TECHNOLOGY, KALABURAGI

Date: 26/06/2019

## CIRCULAR


All the Students are hereby informed to attend the Certification course on "ADVANCED C AND C++" from 1-Aug-19 in Seminar Hall. Attendance will be recorded.

**Copy to:**

- 1) All the Department HOD's
- 2) Classrooms
- 3) Notice Board
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## CERTIFICATION COURSE

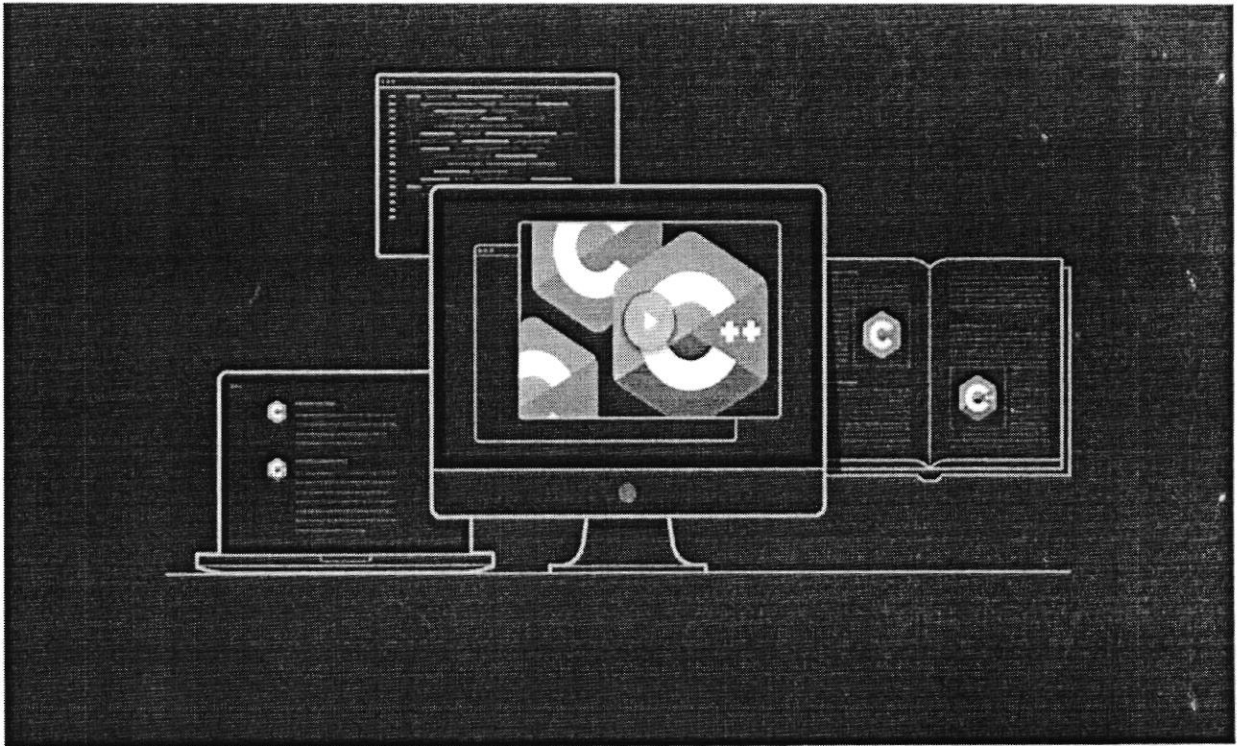
## SYLLABUS

**ACADEMIC YEAR 2019-2020**

  
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## ADVANCED C AND C++



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## ADVANCED C AND C++

### Course Objectives:

- Master advanced features of C and C++
- Develop efficient and optimized code
- Understand and implement complex data structures

### SYLLABUS

#### **Advanced C Programming**

##### **1. Pointer Arithmetic and Memory Management**

- Pointer arithmetic
- Dynamic memory allocation (malloc, calloc, realloc, free)
- Memory leaks and debugging tools

##### **2. File I/O and Manipulation**

- File handling in C (fopen, fclose, fread, fwrite, fprintf, fscanf)
- Binary vs. text file operations

#### **Advanced Data Structures in C**

##### **1. Linked Lists and Other Structures**

- Linked lists (singly, doubly)
- Stacks and queues

##### **2. Bitwise Operations and Macros**

- Bitwise operators and manipulation techniques
- Pre processor directives and macros

#### **Advanced C++ Programming**

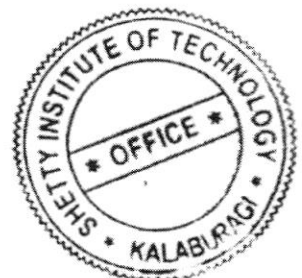
##### **1. Object-Oriented Programming in Depth**

- Class design and inheritance
- Polymorphism and abstract classes

##### **2. Templates and Exception Handling**

- Function and class templates
- Basics of exception handling (try, catch, throw)

  
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## Advanced Data Structures in C++

### 1. STL Containers and Iterators

- STL containers (vector, list, deque)
- Iterators and algorithms

### 2. Smart Pointers and Memory Management

- Smart pointers (unique\_ptr, shared\_ptr)
- RAII (Resource Acquisition Is Initialization)

## System-Level Programming and Optimization

### 1. Multithreading and Concurrency

- POSIX threads and C++11 threading basics
- Mutexes and thread synchronization

### 2. Performance Optimization and Debugging

- Profiling and benchmarking
- Debugging tools (gdb, valgrind)



A handwritten signature in black ink, appearing to read "S. Shetty", written over a horizontal line.

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