**CSE 102L: COMPUTER PROGRAMMING LAB**

1. **COURSE OUTLINE:**

The purpose of this lab is to get the students familiar with programming in C++. It discusses IDE, code compilation, debugging and execution of a C++ program. Using programming, it gives a basic understanding of input/output, control structures, loops, structures, functions, and arrays. It also covers strings, pointers, file I/O and recursion. The course involves a good practice of writing efficient algorithms.

1. **WEEKLY COURSE OUTLINE:**

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| **Week** | **Contents** |
| Week 1 | IDE setup, compilation and running of first program |
| Week 2 | Arithmetic and Logical operators and Input/ Output programs |
| Week 3 | Control Structures |
| Week 4 | Loops and Repetitions |
| Week 5 | Functions |
| Week 6 | Function Calls |
| Week 7 | Recursion |
| Week 8 | Type-casting and scope-rules |
|  | **Mid Term Examination** |
| Week 9 | Arrays |
| Week 10 | Passing Arrays to Functions |
| Week 11 | Sorting arrays |
| Week 12 | Searching arrays |
| Week 13 | Characters and Strings |
| Week 14 | Pointers |
| Week 15 | Double Pointers |
| Week 16 | File Handling |
|  | Final Term Examination |

1. **CLASS LEARNING OUTCOMES:**

After completing this course, students will be able to:

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| **CLO #** | **Description** | **Level of Learning** | **PLOs** |
| **1** | Describe fundamental programming concepts in program structure, data types, control structures, functions and recursion | Psy-2 (Set) | PLO5 (Modern tool usage) |
| **2** | Design and analyze algorithms and derive solution for given problem under specific requirements / constraints | Psy-4 (Mechanism) | PLO3 (Design/Development of Solutions) |
| **3** | Demonstrate the use of arrays, pointers and file handling | Psy-3 (Guided Response) | PLO2 (Problem Analysis) |

1. **RESOURCES**
   * TEXT BOOKS
     + Deitel & Deitel, C++ How to Program, 8th Edition
   * REFERENCE BOOKS
     + Robert Lafore, Object Oriented Programming in C++
   * Software Tools
     + GCC Compiler and debugger
     + Code Blocks IDE
     + Windows/Mac/Linux
2. **MAPPING OF CLOs WITH COURSE ASSESSMENT TOOLS**

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| Course Assessment Tools | **CLOs** | | |
| **CLO-1** | **CLO-2** | **CLO-3** |
| Lab Performance | ✓ | ✓ | ✓ |
| Lab Reports | ✓ | ✓ | ✓ |
| Viva | ✓ |  | ✓ |
| Midterm exam | ✓ | ✓ |  |
| Finalterm exam | ✓ | ✓ | ✓ |