

### Object Oriented Programming through C++ Lab

|                                        |          |                                |       |                      |                                 |
|----------------------------------------|----------|--------------------------------|-------|----------------------|---------------------------------|
| <b>Course Code</b>                     | 20CS3351 | <b>Year</b>                    | II    | <b>Semester</b>      | I                               |
| <b>Course Category</b>                 | PCC Lab  | <b>Branch</b>                  | CSE   | <b>Course Type</b>   | Practical                       |
| <b>Credits</b>                         | 1.5      | <b>L-T-P</b>                   | 0-0-3 | <b>Prerequisites</b> | Programming for Problem Solving |
| <b>Continuous Internal Evaluation:</b> | 15       | <b>Semester end evaluation</b> | 35    | <b>Total Marks</b>   | 50                              |

#### Course Outcomes

Upon successful completion of the course, the student will be able to

|            |                                                                                                 |           |
|------------|-------------------------------------------------------------------------------------------------|-----------|
| <b>CO1</b> | Apply Object oriented principles/ C++ constructs for solving problems.                          | <b>L3</b> |
| <b>CO2</b> | Implement programs as an individual on different IDEs/ online platforms.                        | <b>L3</b> |
| <b>CO3</b> | Develop an effective report based on various programs implemented.                              | <b>L3</b> |
| <b>CO4</b> | Apply technical knowledge for a given problem and express with an effective oral communication. | <b>L3</b> |
| <b>CO5</b> | Analyze outputs using given constraints/test cases.                                             | <b>L4</b> |

#### Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:Substantial, 2: Moderate, 1:Slight)

|            | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| <b>CO1</b> |     |     |     |     |     |     |     |     |     |      |      |      | 3    |      |
| <b>CO2</b> |     |     |     |     | 1   |     |     |     | 2   |      |      |      |      |      |
| <b>CO3</b> |     |     |     |     |     |     |     |     |     | 2    |      |      |      |      |
| <b>CO4</b> |     |     |     |     |     |     |     |     |     | 3    |      |      |      |      |
| <b>CO5</b> |     | 2   |     |     |     |     |     |     |     |      |      | 1    |      | 1    |

| <b>Syllabus</b> |                                                                                                    |                     |
|-----------------|----------------------------------------------------------------------------------------------------|---------------------|
| <b>Expt No.</b> | <b>Contents</b>                                                                                    | <b>Mapped CO</b>    |
| 1               | Implement programs on predefined streams.                                                          | CO1,CO2,CO3,CO4,CO5 |
| 2               | Implement programs using functions (passing arguments, overloading).                               | CO1,CO2,CO3,CO4,CO5 |
| 3               | Implement programs using class/object concepts. (Access specifiers, class members, static members) | CO1,CO2,CO3,CO4,CO5 |
| 4               | Implement programs using friend functions.                                                         | CO1,CO2,CO3,CO4,CO5 |
| 5               | Implement programs using constructor(s) and destructor.                                            | CO1,CO2,CO3,CO4,CO5 |
| 6               | Implement programs using operator overloading.                                                     | CO1,CO2,CO3,CO4,CO5 |
| 7               | Implement various types of inheritance techniques.                                                 | CO1,CO2,CO3,CO4,CO5 |
| 8               | Implement programs using virtual functions to achieve polymorphism.                                | CO1,CO2,CO3,CO4,CO5 |
| 9               | Implement programs using FileStreams                                                               | CO1,CO2,CO3,CO4,CO5 |
| 10              | Implement programs on exception handling concepts.                                                 | CO1,CO2,CO3,CO4,CO5 |
| 11              | Implement programs on generic programming concept with templates.                                  | CO1,CO2,CO3,CO4,CO5 |
| 12              | Implement containers in C++ (Sequence Containers and Associative Containers).                      | CO1,CO2,CO3,CO4,CO5 |

### **Learning Resources**

#### **Text Books**

1. Object-Oriented Programming in C++, Robert Lafore, Fourt Edition, 2002, SAMS.
2. Object-Oriented Programming with C++, E Balagurusamy, Eighth Edition, 2020, Mc Graw Hill.

#### **References**

1. The C++ Programming Language, Bjarne Stroustup, Fourth Edition, 2013, Addison-Wesley.
2. Object-Oriented Programming Using C++ Paperback, Joyce Farrell, Fourth Edition, 2013, Cengage.

#### **e-Resources and other Digital Material**

1. <https://www.learncpp.com/>
2. [https://onlinecourses.nptel.ac.in/noc21\\_cs02/preview](https://onlinecourses.nptel.ac.in/noc21_cs02/preview)
3. <https://www.educative.io/courses/learn-object-oriented-programming-in-cpp>
4. <https://www.youtube.com/watch?v=wN0x9eZLix4> (Learn Object Oriented Programming in C++, Beau Carnes, February 2021)