**Introduction to Object Oriented Programming (CSL 202)**

Teaching Plan

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| **Session**  **No** | Topics to be covered | **No. of**  **Lectures** |
| 1 | Object Oriented Programming, Features of object-oriented programming languages like data abstraction, encapsulation, inheritance, polymorphism and late binding. | 1 |
| 2 | Concept of a class, access control of members of a class, instantiating a class, objects, and methods | 2 |
| 3 | Constructors, default constructors, and parameterized constructors | 1 |
| 4 | Function Overloading, Overloading Constructors | 1 |
| 5 | “this” pointer, C++’s dynamic allocation operators, Constructors with dynamic allocation, and destructors and copy constructor | 2 |
| 6 | Static and non-static members and member functions | 1 |
| 7 | Friend functions and Friend Class | 1 |
| 8 | Inheritance and types of inheritance: Single, Multiple, and Multilevel | 2 |
| 9 | Diamond problem, Virtual base class | 1 |
| 10 | Method overriding, run-time polymorphism, Virtual function- pure virtual function, abstract class | 2 |
| 11 | Sessional-I paper discussion | 1 |
| 12 | Operator overloading -Introduction and examples considering “this pointer” | 1 |
| 13 | Overloading through friend functions | 1 |
| 15 | Overloading the assignment operator | 1 |
| 16 | Streams and file handling | 2 |
| 17 | Random access | 1 |
| 18 | Templates: Function template | 2 |
| 19 | Templates: Class template | 1 |
| 20 | Exception handling, and Namespaces, “std” namespace | 2 |
| 21 | Sessional-II paper discussion | 1 |
| 22 | Introduction to Java and its difference with C++, “public static void main method”, First Java Program | 1 |
| 23 | Java Classes and Objects, Methods, Class Variables and Instance Variables, Primitive vs Reference types, Initializing Objects with constructors, “this” reference | 2 |
| 24 | Inheritance | 2 |
| 25 | Abstract Class and Interfaces | 2 |
| 26 | Wrapper Classes | 1 |
| 27 | Serialization and de-serialization of objects | 1 |
| 28 | Exception Handling | 1 |
| 29 | Packages | 1 |
| 30 | File Handling | 1 |

**Note:** Session No. 1 to 21 (About 28 Lectures for C++ till Sessional-II and about 12 Lectures for Java till End Sem. Exam)

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| **Textbooks:**  1. Bjarne Strostrup, “The C++ programming language”, Addison-Wesley  2. Herbert Shildt, “C++: The Complete Reference”, 4th Edition  3. Arnold Ken, Gosling J, “The Java Programming Language”, Addison Wesley  4. Matt Weisfeld, “The Object-Oriented Thought Process”, Pearson |

**Evaluation Policy**

**Theory (100M):**

1. Sessional-I (15M)
2. Sessional-II (15M)
3. End Sem Exam (60 M)

4. TA: 1 Quiz (10 Marks- Between Sessional-II and End-Sem) = Total 10 M

**Lab (25M)**

Evaluations on the assignments and/or project based on C++/Java.

Evaluation 1: Lab Evaluation between Sessional-I and Sessional-II based on the assignments in the lab.

Evaluation 2: Evaluation and Viva between Sessional-II and End-Sem. based on the Group Project.

\*Lab Evaluation-I and II marks will be averaged to finalize 25M.