Course Name: Object Oriented Programming **Credits: 3**
Course Code: CS1101 **L-T-P: 1-0-4**

Course Description: This course teaches object-oriented programming to those who have learnt basic programming concepts and are ready to learn in-depth programming. It focuses on object-oriented programming using JAVA. This course also covers basic concepts for software design and reuse.

Learning Outcome:

On successful completion of this course, the students should be able to:

1. Develop Java Programs with the concepts of primitive data types, strings and arrays.
2. Develop Java Programs using Object Oriented Programming Principles such as Classes, Objects, Data Abstraction, Data Encapsulation, Overloading, Overriding, Polymorphism, Inheritance, and Interfaces.
3. Design, develop and debug programs in Core Java using coding and documentation standards.
4. Incorporate exception handling in Java Programs.
5. Use JDBC API connectivity in between Java Programs and tables.

Prerequisites **Programming**

Sr. No.	**Evaluation Component**	**Marks**
1	Attendance	NIL
2	Assignment	20
3	Class Participation	5
4	Quiz	20
5	Theory Exam-I	NIL
6	Theory Exam-II	NIL
7	Theory Exam-III	25
8	Report-I	NIL
9	Report-II	NIL
10	Report-III	NIL
11	Project-I	NIL
12	Project-II	NIL
13	Project-III	NIL
14	Lab Evaluation-I	10
15	Lab Evaluation-II	20
16	Course Portfolio	NIL
	Total (100)	**100**
Evaluation Scheme for Retest		
	Theory Exam-III	25
	Lab Evaluation-II	20
	Total	**45**

Course Contents:

Basics of Java & Decision Statements - Introduction to Java**:** Features of Java, Byte Code and JVM, JDK, JRE; Data types and Operators: Lexical Tokens, Identifiers, Keywords, Literals, Comments, Primitive Datatypes, ADT, Operator types and precedence, Statements and Flow Control: Conditional statements, looping, return, etc., Abstract data types and their specification. How to implement an ADT. Concrete state space, concrete invariant, abstraction function.

Control Structures, Methods & Constructors - Object Oriented Programming in Java: Object Life time & Garbage Collection.

Methods & Constructors - Constructor & initialization code block, Parameterized Constructor, Loops, Methods.

Array & String - Defining an Array, Initializing & Accessing Array, Multi –Dimensional Array, Operation on String, Mutable & Immutable String, Collection Bases Loop for String, tokenizing a String, Creating Strings using StringBuffer.

OOP's Concept I - Class Fundamentals, Object & Object reference, Access Control, Modifiers, Methods in Java: Method Declarations, Method Signatures, Invoking Methods,

OOP's Concept II - Static vs. Instance Data Fields, Static vs. Instance Methods, Method Overloading, Encapsulation.

Inheritance, Composition, and Aggregation, Invoking Base Class Constructors, Overriding vs. Overloading, Polymorphism Overloading.

Interfaces - Inner Class & Anonymous Classes, Abstract Class, Interface**s.**

Exception Handling - Introduction to Exception handling.

JDBC Programming - The JDBC Connectivity Model, Database Programming: Connecting to the Database, Creating a SQL Query, Getting the Results, and Updating Database Data.

NOTE: ***Integrated Development Environments (IDEs) to be used in this Course are Eclipse or NetBeans – Both are compatible for Object Oriented Programming using Java.***

Suggested Reading Materials:

- Liang, Y. Daniel. Introduction to Java programming: comprehensive version. Pearson Education, 2018.
- Horstmann, Cay S., and Gary Cornell. Core Java 2: Volume I, Fundamentals. Pearson Education, 2016.
- Schildt Herbert. The Complete Reference, Java 2, Fourth Edition. TMH, 2017.

This course includes the **https://www.coursera.org/learn/java-object-oriented-programming through Coursera**. Student may refer course notes, videos & ppts.