CSM301/ CS340	Object Oriented Programming	PCC/ OPC	3– 0 – 0	3 Credits

Pre-requisites:

i. Introduction to Algorithmic Thinking and Programming (CS101)

ii. Introduction to Algorithmic Thinking and Programming Lab (CS102)

Course Outcomes: At the end of this course, students will be able to:

CO1	Construct programs using Object Oriented Design principles like abstraction, polymorphism and inheritance and typing. (Apply)
CO2	Develop applications with handlers for user-defined exceptions, according to the given requirements. (Apply)
CO3	Develop efficient multi-threaded applications with synchronization constructs. (Apply)
CO4	Develop interactive GUI applications with event handling to provide rich user experience. (Apply)
CO5	Develop applications that use file input and output. (Apply)

Course Articulation Matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M	M		L				L			L
CO2	S	M	M	L	L				L			L
CO3	S	M	M	L	L				L			L
CO4	S	M	M	L	M				L			L
CO5	S	M	M	L	M				L			L

S: Strong correlation, M: Medium correlation, L: Low correlation

Detailed Syllabus:

Overview of Object-Oriented Programming and its need, Java Programming Elements: Classes and Objects, Data types, Constructors, Input-Output Handling, Control structures, Method overloading and overriding, Abstraction and Inheritance, Interfaces, final and static: classes, blocks and methods, Packages.

Exception Handling: Types of Exceptions, Exception classes, try, catch, throw, throws and finally, Exception Handling with Method Overriding, Custom Exceptions.

Multithreaded Programming: Introduction to multitasking through processes and threads, The Java Thread Model, creating threads, thread life cycle, thread scheduling, thread priorities, daemon thread, synchronization.

Garbage Collection, Runtime class and Memory management in Java.

String handling: String, StringBuffer, StringBuilder and tokenizer.

Generics: The Collections framework: List, Set and Map interfaces, Enumerator.

Event handling: Event, Listeners and adapter classes, anonymous inner classes.

Abstract Windowing Toolkit (AWT): Button, Label, Checkbox, CheckboxGroup, TextField, TextArea, Choice, List, Menu, Panel, Scrollbar and Layout managers.

File I/O: Character based Streams, Readers and Writers, RandomAccess, Scanner.

Reading List:

1. Java: The Complete Reference, Herbert Schildt, 11th edition, Mc Graw Hill, 2019.
2. Head First Java, Kathy Sierra & Bert Bates, 3rd edition, O'Reilly, 2005.
3. Clean Code, Robert C Martin, Pearson, 2012.
4. Object Oriented Programming with Java, Timothy Budd, Updated Edition, Pearson Education, 2020.
5. Object Oriented Programming with Java, Debasis Samanta, IIT Kharagpur, accessed through: https://cse.iitkgp.ac.in/~dsamanta/java/index.htm, Accessed on: August 2021.