# 19CS2102 - OBJECT ORIENTED PROGRAMMING THROUGH JAVA

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| **Course Category:** | Program Core | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture - Tutorial - Practical:** | 3-0-0 |
| **Prerequisite:** | Basic knowledge of programming. | **Sessional Evaluation:**  **Univ. Exam Evaluation:**  **Total Marks:** | 40  60  100 |
| **Objectives** | * Acquire knowledge on basics of Object Oriented Programming using Java * Learn the fundamental constructs in Java * Develop various applications * To explore the knowledge to create Graphical User Interfaces | | |

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| **Course Outcomes** | Upon successful completion of the course, the students will be able to: | |
| CO1 | Understand the basic concepts of OOP and Java Building Blocks. |
| CO2 | Acquire the knowledge of Classes and Methods |
| CO3 | Conceptualize the techniques of inheritance and packages. |
| CO4 | Understand Interfaces and Exception Handling in java |
| CO5 | Create Multi-threaded Programs and use String handling methods. |
| CO6 | Understand the concept of Event Handling mechanisms and its applicability. |
| **Course Content** | UNIT-I  **Introduction:** Object-Oriented Programming – Two paradigms, Abstraction, Three Supporting Principles, First simple program and second simple program.  **Java Basics:** Buzz words, Data types, Variables and Arrays, Operators-Arithmetic, Bitwise, Relational, Boolean, Assignment, Ternary, Precedence and Associativity.  **Control statements:** Selection, Iteration and Jump statements  UNIT-II  **Classes:** Fundamentals, Declaring Objects, Assigning Object Reference Variables, Methods, Constructors, this keyword and Garbage collection.  **A Closer look at Methods and Classes:** Overloading of Methods, Passing Objects as Parameters, Argument Passing, Returning Objects, Recursion, Access Control, Static, Final, Variable-length Arguments, Overloading Vararg Methods.  UNIT-III  **Inheritance:** Basics, use of super keyword, Multilevel Hierarchy, Constructor execution. Method overriding, Dynamic method dispatch, Abstract classes, Using final with Inheritance.  **Packages:** Basics, Member Access, Importing Packages.  UNIT-IV  **Interfaces:** Definitions and Implementations, Nested and Applying Interfaces, Variables in interfaces, Extending interfaces, Default and Static Interface Methods.  **Exception Handling:** Fundamentals, Types, Uncaught Exceptions, Usage of try and catch clauses, Multiple catch clauses, throw, throws and finally keywords.  UNIT-V  **Thread Programming:** Thread Model, Creation of Single and multiple threads, Thread Priorities and Synchronizations, Inter Thread Communication – wait(), notify(), notifyall().  **String Handling:** Constructors, length(), Special String Operations, Character Extraction, String Comparison – equals(), equalsIgnoreCase(), startsWith(), endsWith(), Deep Vs Shallow comparisons, String Buffer – constructors, length(), capacity(), reverse() and replace().  UNIT-VI  **Event Handling:** Delegation Event Model, Event Classes, KeyEvent Class, Listener Interfaces, Handling Mouse Events, usage of delegation model, Adapter Classes, Inner Classes, Anonymous Inner Classes. | |
| **Text Books and References:** | Text Books:   1. Java: The Complete Reference, 10th Edition, Herbert Schildt TMH. | |
| Reference Books:   1. Understanding Object-oriented Programming with Java, Timothy Budd, Addison Wesley. 2. A Comprehensive Introduction to Object-Oriented Programming with Java, C. Thomas Wu, McGraw Hill Higher Education. 3. Object-Oriented Programming with Java, Second Edition, Barry J. Homes, Daniel T. Joyce, Jones and Bartlett Publishers. 4. Object-Oriented Programming and Java, Danny Poo, Derek Kiong, Swarnalatha Ashok, Second Edition, Springer. 5. Object-Oriented Programming using Java, Simon Kendal, Simon Kendal & Ventus Publication Aps. | |
| **E-Resources** | 1. <https://nptel.ac.in/courses> 2. <https://freevideolectures.com/university/iitm> 3. [www.javatpoint.com](http://www.javatpoint.com) | |