# OBJECT ORIENTED PROGRAMMING

**II B. TECH- II SEMESTER**

| Course Code | Category | Hours / Week | | | Credits | Maximum Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | L | T | P | C | CIE | SEE | Total |
| A4CS09 | PCC | 3 | 1 | - | 4 | 30 | 70 | 100 |

**COURSE OBJECTIVES:**

1. To teach principles of object oriented programming paradigm including abstraction, encapsulation, inheritance and polymorphism.
2. To impart fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
3. To inculcate concepts of inheritance to create new classes from existing one & Design the classes needed given a problem specification;
4. To familiarize the concepts of packages and interfaces.
5. To facilitate students in handling exceptions.
6. To demonstrate the concept of event handling used in GUI.

**COURSE OUTCOMES:**

At the end of the course students will be able to:

1. Analyze the necessity for Object Oriented Programming paradigm over structured programming and become familiar with the fundamental concepts in OOP like encapsulation, Inheritance and Polymorphism
2. Design and develop java programs, analyze, and interpret object oriented data and reportresults.
3. Design an object oriented system, AWT components and multithreaded processes as perneeds and specifications.
4. Participate and succeed in competitive examinations like GATE, Engineering services,recruitment interviews etc.
5. Plan their career in java based technologies like HADOOP etc

| UNIT-I | INTRODUCTION:BASICS OF JAVA | Classes: 12 |
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**Basics of Java**: Review of Object oriented concepts, History of Java, Java buzzwords, JVM architecture, Data types, Variables, Scope and life time of variables, Arrays, Operators, Control Statements, Type Conversion and Casting, Simple Java Program, Constructors, Methods, Static Block, Static Data, Static Method String and String Buffer Classes, Using Java API Document.

| UNIT-II | INHERITANC, PACKAGES AND I/O STREAMS | Classes: 14 |
|---|---|---|

**INHERITANCE AND POLYMORPHISM**: Basic concepts, Types of inheritance, Member access rules, Usage of this and Super key word, Method Overloading, Method overriding, Abstract classes, Dynamic method dispatch, Usage of final keyword.

**PACKAGES AND INTERFACES**: Defining package, Access protection, Importing packages, Defining and Implementing interfaces, and Extending interfaces, interface static methods, interface default methods.

**I / O STREAMS**: Concepts of streams, Stream classes- Byte and Character stream, Reading console Input and Writing Console output, File Handling.

| UNIT-III | EXCEPTION HANDLING AND MULTI THREADING | Classes: 10 |
|---|---|---|

**EXCEPTION HANDLING**: Exception types, Usage of Try, Catch, Throw, Throws and Finally keywords, Built-in Exceptions, Creating own Exception classes.

**MULTI THREADING**: Concepts of Thread, Thread life cycle, creating threads using Thread class and Runnable interface, Synchronization, Thread priorities, Inter Thread communication.

| UNIT-IV | AWT CONTROLS AND EVENT HANDLING | Classes: 14 |
|---|---|---|

**AWT CONTROLS**: The AWT class hierarchy, user interface components- Labels, Button, Text Components, Check Box, Check Box Group, Choice, List Box, Panels – Scroll Pane, Menu, Scroll Bar. Working with Frame class, Colour, Fonts and layout managers.

**EVENT HANDLING**: Events, Event sources, Event Listeners, Event Delegation Model (EDM), Handling Mouse and Keyboard Events, Adapter classes, Inner classes

| UNIT-V | SWINGS AND APPLETS | Classes: 10 |
|---|---|---|

**SWINGS**: Introduction to Swings, Hierarchy of swing components. Containers, Top level containers - JFrame, JWindow, JDialog, JPanel, JButton, JToggleButton, JCheckBox, JRadioButton, JLabel, JTextField, JTextArea, JList, JComboBox, JScrollPane.

**APPLETS**: Life cycle of an Applet, Differences between Applets and Applications, Developing applets, simple applet.

**TEXT BOOKS:**

1. Herbert schildt (2010), The complete reference, 7th edition, Tata Mc graw Hill, New Delhi
2. Head First Java, O'rielly publications

**REFERENCE BOOKS:**

1. T. Budd (2009), An Introduction to Object Oriented Programming, 3rd edition, Pearson Education, India.
2. J. Nino, F. A. Hosch (2002), An Introduction to programming and OO design using Java, John Wiley & sons, New Jersey.
3. Y. Daniel Liang (2010), Introduction to Java programming, 7th edition, Pearson education, India.

**WEB REFERENCES:**

1. https://www.geeksforgeeks.org/java/
2. https://stackify.com/oops-concepts-in-java/
3. https://www.tutorialspoint.com/java/java_overview.htm
4. https://www.javatpoint.com/java-oops-concepts

**E-Text Books:**

1. http://iiti.ac.in/people/~tanimad/JavaTheCompleteReference.pdf
2. www.portcity.edu.bd/ELibrary/CSE/javaprogramming.pdf
3. https://www.pdfdrive.net/head-first-javapdf-e18943750.html
4. https://www.amazon.com/Introduction-Java-Programming-Comprehensive-International

**MOOC COURSE**

1. https://www.mooc-list.com/tags/java
2. https://www.class-central.com/tag/java
3. https://www.quora.com/What-are-the-best-MOOCs-for-learning-Java