OBJECT ORIENTED PROGRAMMING THROUGH JAVA

COURSE CODE: 22CA3108   **L T P C**

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COURSE OUTCOMES:
At the end of the course, student will be able to
CO1: Interpret object orientation and Utilize programming strategies.(L2)
CO2: Contrast classes and objects and Analyze Inheritance.(L4)
CO3: Build Packages, Manage Exceptions and Apply Threads.(L3)
CO4: Build GUI screens along with event handling.(L3)
CO5: Identify various classes and methods in java. lang, util, i/o and net packages.(L3)

UNIT-I: Introduction to Objects   **(10 Lectures)**
What is Object Oriented Programming?, Object Orientation as a New Paradigm: The Big Picture
(TEXT BOOK-2), An Overview of Java: Process Oriented Vs Object Oriented Programming, OOPs
Principles, Java Buzz Words, The Byte Code, A First Simple Program
Data Types and Variables, Operators and Expressions, Control Statements, Type Conversion and
casting, Lexical Issues in Java, Arrays: Single Dimension, command line arguments, Arrays: Multi
Dimension.

Learning Outcomes:
At the end of the module, students will be able to
- Summarize object oriented programming features. (L2)
- Describe Java features. (L2)
- Explain various data types and control statements in Java. (L2)

UNIT-II: Introducing Classes   **(10 Lectures)**
Class Fundamentals with Variables and Methods, Declaring objects for accessing variables and
methods, Constructors: Default and Parameterized, this keyword and Garbage Collection, Final and
Static Key words, Overloading Methods, Overloading Constructors, Using objects as Parameters,
Returning objects, String and String Buffer
Inheritance:
Inheritance Basics, Types of Inheritance, Using Super keyword for constructors, Super to call
variables and methods, Method Overriding, Dynamic Method Dispatch

Learning Outcomes:
At the end of the module, students will be able to
- Explain classes, objects and constructors. (L2)
- Build Java programs manipulating Strings. (L3)
- Classify different kinds of inheritance. (L4)

UNIT-III: Packages and Interfaces   (10 Lectures)
Defining a Package, importing a package, Package Example, Access Protection, An Access Example, Abstract classes, Interfaces: Defining and Implementing Interfaces

Exception Handling:
Exception Handling Fundamentals, Exception Types, throw, throws and Finally Creating your own exception, Chained Exceptions
Multithreaded Programming:
Java Thread Model, The Main thread, Two ways of Creating a Thread, Creating Multiple Threads, isAlive(),join(), Synchronization, Inter Thread Communication

Learning Outcomes:
At the end of the module, students will be able to
- Demonstrate the use of packages in Java (L2)
- Illustrate exception handling in Java (L3)
- Build Java multi-threaded programs. (L3)

UNIT-IV: Introducing GUI Programming with Swings   (10 Lectures)
Swing Features, MVC Connection, Components and Containers, Panes, Simple Swing Application, Simple Swing Applet, Layout Managers: Flow, Border, Card, Grid, Grid Bag, Working with Color, Working with Fonts, Painting in Swing, Exploring Swing Components
Delegation Event Model:
Event Classes, Sources and Listeners.
Learning Outcomes:
At the end of the module, students will be able to
- Utilize swing to build GUI based applications (L3)
- Explain various event classes and listeners (L2)
- Develop event driven based GUI applications. (L3)

UNIT-V: Exploring java.lang   (10 Lectures)
Wrapper classes, Object, Math, Runtime
Exploring java.util:
The collection frame work: ArrayList, HashSet and HashMap, String Tokenizer, Calender, Random, Scanner
Exploring java.io:
File class, Streams
Exploring java.net:
Socket, ServerSocket, InetAddress, DataGramSocket, URL, Client-Server Program using Sockets

Learning Outcomes:
At the end of the module, students will be able to
- Summarize various built-in Java classes. (L2)
- Apply various methods of Java built-in classes. (L3)
- Build network based Java applications (L3).

TEXT BOOKS:
1. Herbert Schildt, "*Java The complete reference*", 11th Edition, McGrawHill, 2019
2. Timothy budd, "*An introduction to object-oriented programming*", 3rd Edition, Pearson Education, 2009.

REFERENCE BOOK:

Y. Daniel Liang, "*Introduction to Java Programming Comprehensive Version*", 10th Edition, Pearson, 2015.

WEB REFERENCE:

https://onlinecourses.nptel.ac.in/noc19_cs84/preview