BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY AND SCIENCE (A) :: BATLAPALEM, Andhra Pradesh, India

MCA Course Structure & Syllabus

(Applicable for batches admitted from 2025-2026)

MCA II Semester

Course code : 25MC2T08

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3	0	0	3

OBJECT ORIENTED PROGRAMMING USING JAVA

Course Objectives:

To understand the basic concepts of object oriented programming concept

- To introduce the principles of inheritance and polymorphism and
- demonstrate how they are related to the design of abstract classes To understand the implementation of packages and interface
- To introduce the concept of multithreading and exception handling
- To learn and understand the design of Graphical User Interface using swing controls

UNIT–I:

Basics of Object Oriented Programming (OOP):Need for OO paradigm , A way of viewing world- Agents, responsibility, messages, methods, classes and instances, class hierarchies (Inheritance), method binding, overriding and exceptions, summary of OOP concepts, coping with complexity, abstraction mechanisms. Java Basics: Data types, variables, scope and lifetime of variables, arrays, operators, expressions, control statements, type conversion and costing, simple java program, classes and objectsconcepts of classes, objects, constructors methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, string handling.

UNIT–II:

Inheritance: Hierarchical abstractions, Base class object, subclass, subtype, substitutability, forms of inheritance-specialization, specification, construction, extension, limitation, combination, benefits of inheritance costs of inheritance. Member access rules, super uses, using final with inheritance, polymorphism, abstract classes.Packages and Interfaces: Defining, Creating and Accessing a package, Understanding CLASSPATH, Importing packages, differences between classes and interfaces, defining an interface, Implementing interface, applying interfaces variables in interface and extending interfaces.

UNIT–III:

Exception handling and Multithreading: Concepts of exception handling, benefits of exception handling, Termination or resumptive models, exception hierarchy, usage of try, catch, throws and finally, built in exceptions, creating own exception subclasses. Differences between multithreading and multitasking, thread lifecycle, creating threads, synchronizing threads, daemon threads, thread groups.

University Nominee Dr.Suneetha Eluri		Alumni Member Mr.HariSuresh Polisetti	
SubjectExpert:1 Dr. B Kezia Rani		Chairman Mr. AVS M Ganesh	
SubjectExpert:2 Dr.SuneelKumarDuvvuri		Member Mr. G L N V S Kumar	
Representative From Industry Mr.SaiKrishna Narima		Member	

UNIT–IV:

Event Handling: Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes, inner classes. The AWT class hierarchy, user-interface components- labels, button, canvas, scrollbars, text components, check box, checkbox groups, choices, list panes, scroll pane, dialogs, menu bar, graphics, layout manager, layout manager types- boarder, grid, flow, card and grid bag.

UNIT-V:

Swings: Introduction, limitations of AWT, MVC architecture, components, containers, exploring swing- JFrame and JComponent, Icons and Labels, text fields, buttons-The JButton class, Check boxes, Radio Buttons, Combo boxes, Tabbed panes, Scroll panes, Trees and Tables.

Text Books: 1. Java-The Complete Reference,7/e, Herbert schildt, TMH

Reference Books:

1. JAVA: How to program,8/e, Dietal, Dietal, PHI
2. Introduction of programming with JAVA, S.Dean, TMH
3. Introduction to JAVA programming, 6/e, Y.Daniel Liang, Pearson
4. Core Java2, Vol1(Vol2) Fundamentals (Advanced),7/e, Cay.S.Horstmann, Gary Cornell, Pearson
5. Big Java 2,3/e, Cay.S.Horstmann,Wiley
6. Object Oriented Programming through Java, P.Radha Krishna, University Press

Web resources:

1. https://onlinecourses.nptel.ac.in/noc20_cs58/preview
2. https://www.iitk.ac.in/esc101/05Aug/tutorial/information/resources.html
3. https://docs.oracle.com/javase/tutorial/index.html
4. https://www.javacodegeeks.com/best-java-programming-resources

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