



बिरसा मुंडा ट्रायबल युनिवर्सिटी Birsa Munda Tribal University

राजपिपला, जि० नर्मदा Rajpipla, Dist. Narmda

Established by Tribal Development Department, Govt. of Gujarat

School of Computer Science

M. Sc. (Information Technology) Programme

Subject Code & Name: MITMC201-OOP using JAVA

Teaching And Evaluation Scheme:

Teaching Scheme				Examination Scheme			
Credits				Component Weightage			
				CCE		SEE	
L	T	P	Total	TH	PWE	TH	PWE
4	-	-	4	50%	-	50%	-

Programme Name	M. Sc. (Information Technology)
Semester	2
Course Code	MITMC201
Course Title	OOP using JAVA
Course Content Type (Th. / Pr.)	Th.
Course Credit	4
Sessions + Lab Per Week	4
Total Teaching/ Lab Hours	60
* 2 Lab = 1 session	

Learning Objectives

Upon successful completion of this course, students will be able to:



- Understand the fundamentals of Java programming, Java environment, and object-oriented programming concepts.
- Apply Java programming constructs such as operators, arrays, control statements, classes, and methods to develop programs.
- Analyze object-oriented features including inheritance, abstraction, interfaces, exception handling, and multithreading in Java applications.
- Develop database-driven and modular Java applications using Java Collections Framework and JDBC connectivity.

Learning Outcomes

After successful completion of the course, students will be able to:

- Explain Java architecture, execution process, and core programming concepts
- Demonstrate the use of control structures, arrays, strings, and object-oriented programming techniques in Java
- Implement exception handling, multithreading, interfaces, and collection framework concepts in application development
- Design and develop Java applications with database connectivity using JDBC for real-world problem solving.

CLO – PLO Mapping Matrix

CLO/ PLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9
CLO1	3	2	1	1	–	–	–	1	1
CLO2	3	3	3	2	–	1	–	1	2
CLO3	3	3	3	3	1	2	1	1	2
CLO4	3	3	3	3	1	2	1	2	2

Detailed Contents

Unit	Topic/Sub Topic	Teaching Hours
I	Java Evolution	15



Introduction to Java	• Java history • Java features Java environment • JDK,JRE,JVM • JIT Compiler • The compilation flow of java program Language fundamentals • Java token • Keyword • Identifiers • Constants and variables • Literals • Separators • Operators • Type casting • Arrays, strings and vectors • Java statement • Implementing a java program Decision making, branching and looping • IF, If-else Statement • Switch statement • While loop • Do while loop • For loop • Goto, Break and continue	
II	• Principles of OOP • Classes and objects	15



Object Oriented Programming concepts	○ Definition and concept ○ Creating classes and objects ○ Constructors and destructors • Fields and methods ○ Creating data members and methods ○ Access specifiers (Public, Private, Protected) ○ super ○ Static variables and methods • Inheritance ○ Concept and types ○ Method overriding ○ Final class and method • Abstraction ○ Concept and need ○ Abstract class and methods	
III Exception Handling, Multithreading and JAVA collections	Exception handling • Concept and need • Types of exception • Throwing and catching mechanism Multithreading • Concept and need • Concept of thread and thread creation • Thread management • Thread synchronization JAVA Collection Framework (JCF) • Overview of JCF • List interface	15

	• Set interface • Sorting and ordering	
IV Application building blocks	Interface • Defining interfaces • Extending interfaces • Implementing interface • Accessing interface variables Packages • Concept and need • Defining and using • Access protection Java Database Connectivity (JDBC) • JDBC architecture • JDBC API • Performing CRUD operation • Transaction management	15
Reference Books		
1. Gvero, Igor. (2013). Core Java volume I: fundamentals, 9th edition by Cay S. Horstmann and Gary Cornell. ACM SIGSOFT Software Engineering Notes. 38. 33-33. 10.1145/2464526.2464552. 2. Balagurusamy, E. (2000). <i>Programming with Java</i> (2nd ed.). Tata McGraw-Hill. 3. Naughton, P., & Schildt, H. (1999). <i>Java: The complete reference</i>. Tata McGraw-Hill.		
Web Resources		
1. https://www.programiz.com/java-programming 2. https://dev.java/learn/ 3. https://www.w3schools.com/java/		
Required Software(s) (if any)		

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| <ol style="list-style-type: none">1. Java Development Kit2. Netbeans/ Eclipse |
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L:: Lecture, **T::** Tutorial, **P::** Practical

CCE:: Continuous & Comprehensive Evaluation

(CCE theory includes Mid Semester Examination, Assignment, MCQ Quizzes, Seminar, Reflective Notes, Class Participation, Case Analysis and Presentation, Slip Tests (Announced/ Surprised), Attendance etc. or any combination of these)

PWE: Practical Work Examination

(PWE includes Laboratory Practical Work, Project Work, Viva simulation exercise work etc.)

SEE:: Semester End Evaluation