

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING - AI & ML

Module 3: (9 Hours of Pedagogy)

Inheritance: Inheritance Basics, Using super, Creating a Multilevel Hierarchy, When Constructors Are Executed, Method Overriding, Dynamic Method Dispatch, Using Abstract Classes, Using 'final' with Inheritance, Local Variable Type Inference and Inheritance, The Object Class.

Packages: Packages, Packages and Member Access, Importing Packages.

Interfaces: Interfaces, Default Interface Methods, Use static Methods in an Interface, Private Interface Methods.

Textbook: Chapters 8, 9

Module 4: (8 Hours of Pedagogy)

Exceptions: Exception-Handling Fundamentals, Exception Types, Uncaught Exceptions, Using try and catch, Multiple catch Clauses, Nested try Statements, throw, throws, finally, Java's Built-in Exceptions, Creating Your Own Exception Subclasses, Chained Exceptions.

Multithreaded Programming: The Java Thread Model, The Main Thread, Creating a Thread, Creating Multiple Threads, Using isAlive() and join(), Thread Priorities, Obtaining a Thread's State.

Textbook: Chapters 10, 11

Module 5: (8 Hours of Pedagogy)

Enumerations, Type Wrappers and Autoboxing: Enumerations (Enumeration Fundamentals, The values() and valueOf() Methods), Type Wrappers (Character, Boolean, The Numeric Type Wrappers), Autoboxing (Autoboxing and Methods, Autoboxing/Unboxing Occurs in Expressions, Autoboxing/Unboxing Boolean and Character Values).

Generics: A Simple Generics Example, A Generic Class with Two Type Parameters, The General Form of a Generic Class.

Textbook: Chapters 12, 14

List of Text Books

Textbooks

1. Herbert Schildt and Danny Coward, Java: The Complete Reference, 13th Edition, McGraw-Hill, 2024.

Reference Books:

1. Cay S. Horstmann, Core Java Volume I – Fundamentals, 14th Edition, Oracle Press, 2026.
2. Reema Thareja, Programming in C, 3rd Edition, Oxford University Press, 2023.
2. E. Balagurusamy, Programming with Java, 7th Edition, McGraw-Hill Education, 2024.

List of URLs, Text Books, Notes, Multimedia Content, etc

Suggested Web Links:

1. Official Java documentation (Oracle): <https://docs.oracle.com/javase/tutorial/>

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2. Modern Java learning resources (Dev Java): <https://dev.java/learn/>
3. Java Tutorial: <https://www.w3schools.com/java/>
4. Programming examples and practice (GeeksforGeeks): <https://www.geeksforgeeks.org/java/java/>
5. Infosys Springboard Course on Java Programming Fundamentals: <https://infyspringboard.onwingspan.com/web/en/login>
6. HackerRank platform: <https://www.hackerrank.com/domains/java>
7. Structured video lectures (NPTEL): (<https://nptel.ac.in/courses/106105191/>)

Term Work (TW) and Self Learning (SL) Components Instructions:

Term Work (TW) Activity

1. Students shall install and configure the Java Development Kit (JDK) and a suitable Java IDE, develop, compile, debug, and execute simple Java programs to understand the Java program development and execution model, and demonstrate the successful execution of the programs to the course instructor.

Self-Learning (SL) Activity:

1. Students shall complete the Infosys Springboard – Java Programming Fundamentals course and submit the course completion certificate for evaluation.
2. Students shall solve Java programming problems on the HackerRank Java Domain and submit their HackerRank profile link along with screenshots of the completed exercises for verification.

Course Outcomes	The student will be able to: 1. Demonstrate proficiency in writing simple programs involving branching and looping structures. 2. Construct object-oriented solutions using classes, objects, and methods. 3. Develop programs using inheritance, packages, and interfaces. 4. Make use of exception handling and multithreading in solving complex problems 5. Apply concepts of autoboxing, enumerations, and generics in program development.
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The Correlation of Course Outcomes (CO's) and Program Outcomes (PO's)

Course Code: 1BCS302												
List of Course Outcomes	Program Outcomes											Total
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	
CO-1	3	2	2	1	2	-	-	-	-	-	-	10
CO-2	3	3	3	2	2	-	-	-	-	-	-	13
CO-3	3	3	3	2	3	-	-	1	1	-	-	16
CO-4	3	3	3	3	3	-	-	-	1	-	1	17
CO-5	3	2	3	2	3	-	-	-	-	-	-	13
Total	3	2.6	2.8	2	2.6	0	0	1	2	0	1	69

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution 0 = No Contribution

The Correlation of Course Outcomes (CO's) and Program Outcomes (PSO's)

SubjectCode: 1BCS302		Course Title: Object Oriented Programming with Java	
List of Course Outcomes	Program Specific Outcomes		Total
	PSO-1	PSO-2	
CO-1	2	1	3
CO-2	3	2	5
CO-3	3	2	5
CO-4	3	3	6
CO-5	3	2	5
Total	2.33	2	24

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution 0 = No Contribution