



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE MODULE FOR THE SESSION 2025-2026 (ODD SEM)

Course Syllabus with CO's

Academic Year: 2025 – 2026						
Department: Computer Science & Engineering						
Course Code	Course Title	Core/Elective	Prerequisite	Contact Hours		Total Hrs/ Sessions
				L	T	
BCS306A	Object Oriented programming with Java	Elective		2		2 40
Objectives	<p>Course Objectives: To make/enable students to</p> <ul style="list-style-type: none"> • To learn primitive constructs JAVA programming language. • To understand Object Oriented Programming Features of JAVA. • To gain knowledge on: packages, multithreaded programming and exceptions 					

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective

1. Use <https://pythontutor.com/visualize.html#mode=edit> in order to visualize the Java programs
2. Chalk and talk
3. Online demonstration
4. Hands on problem solving

Module-1

An Overview of Java: Object-Oriented Programming, A First Simple Program, A Second Short Program, Two Control Statements, Using Blocks of Code, Lexical Issues, The Java Class Libraries, Data Types, Variables, and Arrays: Java Is a Strongly Typed Language, The Primitive Types, Integers, Floating-Point Types, Characters, Booleans, A Closer Look at Literals, Variables, Type Conversion and Casting, Automatic Type Promotion in Expressions, Arrays, Operators: Arithmetic Operators, The Bitwise Operators, Relational Operators, Boolean Logical Operators, The Assignment Operator, The ? Operator, Operator Precedence, Using Parentheses, Control Statements: Java’s Selection Statements, Iteration Statements, Jump Statements.

Text book 1: Ch 1, Ch 2, Ch 4, Ch 5

Module-2

Introducing Classes: Class Fundamentals, Declaring Objects, Assigning Object Reference Variables, Introducing Methods, Constructors, The this Keyword, Garbage Collection, The finalize() Method, A Stack Class, A Closer Look at Methods and Classes: Overloading Methods, Using Objects as Parameters, A Closer Look at Argument Passing, Returning Objects, Recursion, Introducing Access Control, Understanding static, Introducing final, Arrays Revisited

Text book 1: Ch 6, Ch 7 (7.1-7.9)

Module-3

Inheritance: Inheritance, Using super, Creating a Multilevel Hierarchy, When Constructors Are Called, Method Overriding, Dynamic Method Dispatch, Using Abstract Classes, Using final with Inheritance, The Object Class.



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Module-4

Packages and Interfaces: Packages, access Protection, Importing packages, Interfaces, Exception Handling : 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, Using Exceptions.

Module-5

Multithreaded Programming: The Java Thread Model, The Main Thread, Creating a Thread, Creating Multiple Threads, Using isAlive() and join(), Thread Priorities, Synchronization, Interthread Communication, Suspending, Resuming, and Stopping Threads, Obtaining a Thread's State. 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). Chapter 11, 12

Course Outcomes	CO1	Demonstrate proficiency in writing simple programs involving branching and looping structures.
	CO2	Design a class involving data members and methods for the given scenario.
	CO3	Apply the concepts of inheritance and interfaces in solving real world problems.
	CO4	Use the concept of packages and exception handling in solving complex problem
	CO5	Apply concepts of multithreading, autoboxing and enumerations in program development

Internal Assessment Marks: 40 (3 Session Tests are conducted during the semester and marks allotted based on average of performances).

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

Subject Code:	TITLE: Object Oriented Programming with Java											Total
	Program Outcomes											
List of Course Outcomes	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	
	CO-1	2	3	3	-	-	-	-	-	-	-	8
CO-2	2	3	3	-	-	-	-	-	-	-	-	8
CO-3	2	3	3	-	-	-	-	-	-	-	-	8
CO-4	2	3	3	-	-	-	-	-	-	-	-	8
CO-5	2	3	3	-	-	-	-	-	-	-	-	8
Total	10	15	15	0	0	0	0	0	0	0	0	40

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



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Subject Code:	BCS306A	TITLE: Object Oriented Programming with Java		
List of Course Outcomes	Program Specific Outcomes		Total	
	PSO-1	PSO-2		
CO-1	0	2	2	
CO-2	2	2	4	
CO-3	2	2	4	
CO-4	2	2	4	
CO-5	2	2	4	
Total	8	10	18	

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





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