

# SWARNANDHRA COLLEGE OF ENGINEERING AND TECHNOLOGY



AUTONOMOUS  
NARSAPUR, WEST GODAVARI DISTRICT, AP - 534280

**DEPARTMENT OF CSE – DATA SCIENCE**

## TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods/Week	Academic Year	Date of commencement of Semester
23CS4T02	Object Oriented Programming through Java	IV	CSE-DS- A&B	5	2024 -2025	16-12-2024
<b>COURSE OUTCOMES:-</b>						
1	Identify and utilize Java language components effectively in applications (K2)					
2	Implement object-oriented programming principles using Java. (K3)					
3	Extend Java classes with inheritance and handle exceptions in applications (K3)					
4	Design multi-threaded applications in Java. (K3)					
5	Use Java APIs for program development and database connectivity. (K3)					
Unit	Out Comes/ Bloom's Level	Topics No.	Topics/Activity	Text Book/ Reference	Contact Hour	Delivery Method
<b>UNIT-I: Introduction</b>						
<b>I</b>	<b>CO1:</b> Identify and utilize Java language components effectively in applications	1.1.1	Object Oriented Programming: Basic concepts: Object, Class, Abstraction, Encapsulation, Inheritance, Polymorphism, Dynamic binding and Message passing.	T1,R1	2	Chalk,talk
		1.1.2	Program Structure in Java: Introduction,	T1,R1	1	Chalk,talk
		1.1.3	Elements or Tokens in Java,	T1,R1	2	Chalk,talk
		1.1.4	Command Line Arguments	T1,R1	1	Chalk,talk
		1.1.5	User Input to Programs.	T1,R1	1	Chalk,talk
		1.2.1	Data Types in Java, Declaration of Variables,	T1,R1	1	Chalk,talk
		1.2.2	Type Casting, Scope of Variable	T1,R1	1	Chalk,talk
		1.2.3	Static Variables and Methods	T1,R1	1	Chalk,talk
		1.3.1	Introduction to Operators, Types of operators, Precedence and Associativity of Operators	T1,R1	1	Chalk, Talk
		1.4.1	Control Statements: Introduction if Expression, Nested if Expressions, if-else Expressions, Switch Statement,	T1,R1	1	Chalk, Talk

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		1.4.2	Iteration Statements, while Expression, do-while Loop, for Loop, Nested for Loop, For-Each Loop,	T1,R1	1	Chalk, Talk
		1.4.3	Break Statement, Continue Statement	T1,R1	1	Chalk, Talk
	COURSE BEYOND SYLLABUS		Object-Oriented Design (OOD), OOP in Java Advanced Topics	R1	1	Chalk, Talk
			Java Type System, Advanced Type Casting, Lambda Expressions & Functional Programming	R1	1	Chalk, Talk
<b>Total</b>						<b>16</b>

UNIT-II: Classes and Objects:								
<b>II</b>	<b>CO2:</b> Implement object-oriented programming principles using Java.	2.1.1	Classes and Objects: Introduction, Class Declaration and Modifiers	T2,R1	2	Chalk, Talk		
		2.1.2	Class Members, Declaration of Class Objects	T2,R1	1	Chalk, Talk		
		2.1.3	Assigning One Object to Another	T2,R1	1	Chalk, talk		
		2.1.4	Access Control for Class Members	T2,R1	1	Chalk, talk		
		2.1.5	Constructor Methods for Class, Overloaded Constructor Methods	T2,R1	1	Chalk, Talk		
		2.1.6	Nested Classes	T2,R1	1	Chalk, Talk		
		2.1.7	Final Class and Methods	T2,R1	1	Chalk, Talk		
		2.1.8	Passing Arguments by Value and by Reference	T2,R1	1	Chalk, Talk		
		2.1.9	Keyword this.	T2,R1	2	Chalk, Talk		
		2.2.1	Methods: Introduction, Defining Methods	T2,R1	1	Chalk, talk		
		2.2.2	Overloaded Methods, Overloaded Constructor Methods	T2,R1	2	Chalk, talk		
		2.2.3	Class Objects as Parameters in Methods, Access Control	T2,R1	1	Chalk, talk		
		2.2.4	Recursive Methods, Nesting of Methods,	T2,R1	1	Chalk, talk		
		2.2.5	Overriding Methods,	T2,R1	1	Chalk, talk		
		2.2.6	Attributes Final and Static.	T2,R1	1	Chalk, talk		
			COURSE BEYOND SYLLABUS		Advanced Class Design, Copy Constructors, Advanced Method Design	R1	1	Chalk, talk
		<b>Total</b>						<b>19</b>

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UNIT-III: Arrays						
<b>III</b>	<b>CO3:</b> Extend Java classes with inheritance and handle exceptions in applications.	3.1.1	Arrays: Introduction, Declaration and Initialization of Arrays,	T2,R1	1	Chalk,Talk
		3.1.2	Storage of Array in Computer Memory, Accessing Elements of Arrays,	T2,R1	1	Chalk,Talk
		3.1.3	Operations on Array Elements, Assigning Array to Another Array,	T1,R2	1	Chalk,Talk
		3.1.4	Dynamic Change of Array Size, Sorting of Arrays.	T1,R2	1	Chalk,Talk
		3.1.5	Multidimensional arrays	T1,R2	1	Chalk,Talk
		3.2.1	Inheritance: Introduction, Process of Inheritance,	T1,R2	1	Chalk,Talk
		3.2.2	Types of Inheritances	T1,R2	1	Chalk,Talk
		3.2.3	Universal Super Class-Object Class, Inhibiting Inheritance of Class Using Final, Access Control and Inheritance,	T1,R2	1	Chalk,Talk
		3.2.4	Multilevel Inheritance	T1,R2	1	Chalk,Talk
		3.2.5	Application of Keyword Super	T1,R2	1	Chalk,Talk
		3.2.6	Constructor Method and Inheritance, Method Overriding, Dynamic Method Dispatch	T1,R2	1	Chalk,Talk
		3.2.7	Abstract Classes, Interfaces and Inheritance	T1,R2	1	Chalk,Talk
		3.3.1	Interfaces: Introduction, Declaration of Interface, Implementation of Interface, Multiple Interfaces,	T1,R2	1	Chalk,Talk
		3.3.2	Nested Interfaces, Inheritance of Interfaces, Default Methods in Interfaces	T1,R2	1	Chalk,Talk
		3.3.3	Static Methods in Interface, Functional Interfaces, Annotations	T1,R2	1	Chalk,Talk
	<b>COURSE BEYOND SYLLABUS</b>		ArrayList and Array vs. Collection Framework, Array Manipulation with Lambda Expressions	R2	1	Chalk,Talk
			Advanced Inheritance Concepts, The <i>super</i> Keyword in Depth	R2	1	Chalk,Talk
			Advanced Interface Features, Functional Interfaces and Lambda Expressions, Annotations in Interfaces	R2	1	Chalk,Talk
<b>Total</b>					<b>18</b>	

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UNIT-IV: Packages and Java Library						
IV	CO4: Design Multi-threaded applications in Java.	4.1.1	Packages and Java Library: Introduction, Defining Package, Importing Packages and Classes into Programs	T1,R2	1	Chalk,Talk
		4.1.2	Path and Class Path, Access Control, Packages in Java SE,	T1,R2	1	Chalk,Talk
		4.1.3	Java.lang Package and its Classes, Class Object,	T1,R2	1	Chalk,Talk
		4.1.4	Enumeration, class Math, Wrapper Classes, Auto-boxing and Auto-unboxing	T1,R2	2	Chalk,Talk
		4.1.5	Java util Classes and Interfaces	T1,R2	1	Chalk,Talk
		4.1.6	Formatter Class, Random Class, Time Package, Class Instant (java.time.Instant), Formatting for Date/Time in Java, Temporal Adjusters Class.	T1,R2	1	Chalk,Talk
		4.2.1	Exception Handling: Introduction, Hierarchy of Standard Exception Classes,	T1,R2	1	Chalk,Talk
		4.2.2	Keywords throws and throw, try, catch, and finally Blocks	T1,R2	2	Chalk,Talk
		4.2.3	Multiple Catch Clauses, Class Throwable,	T1,R2	1	Chalk,Talk
		4.2.4	Unchecked Exceptions, Checked Exceptions	T1,R2	1	Chalk,Talk
	COURSE BEYOND SYLLABUS		Advanced Package Management and Structure, Advanced Importing and Path Management	R2	1	Chalk,Talk
			Assertions in Exception Handling, Exception Propagation	R2	1	Chalk,Talk
<b>Total</b>					<b>14</b>	
UNIT-V:						
	CO5: Use Java APIs for program development and	5.1.1	String Handling in Java: Introduction, Interface Char Sequence,	T2,R1	1	Chalk,Talk
		5.1.2	Class String, Methods for Extracting Characters from Strings,	T2,R1	1	Chalk,Talk
		5.1.3	Comparison, Modifying, Searching	T2,R1	1	Chalk,Talk
		5.1.4	Class String Buffer.	T2,R1	1	Chalk,Talk

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V		5.2.1	Multithreaded Programming: Introduction, Need for Multiple Threads Multithreaded Programming for Multi-core Processor,	T2,R1	2	Chalk,Talk
		5.2.2	Thread Class, Main Thread-Creation of New Threads, Thread States, Thread Priority-Synchronization,	T2,R1	1	Chalk,Talk
		5.2.3	Deadlock and Race Situations	T2,R1	1	Chalk,Talk
		5.2.4	Inter-thread Communication - Suspending, Resuming, and Stopping of Threads	T2,R1	1	Chalk,Talk
		5.3.1	Java Database Connectivity: Introduction, JDBC Architecture,	T2,R1	2	Chalk,Talk
		5.3.2	Installing MySQL andMySQL Connector/J,	T2,R1	1	Chalk,Talk
		5.3.3	JDBC Environment Setup, Establishing JDBC Database Connections,	T2,R1	1	Chalk,Talk
		5.3.4	ResultSet Interface	T2,R1	1	Chalk,Talk
	COURSE BEYOND SYLLABUS		Character Sequences and String Class, Advanced String Comparison, Efficient String Handling	R2	1	Chalk,Talk
			Thread Management and Advanced Techniques, Fork/Join Framework (Java 7+), Advanced Concurrency Utilities	R2	1	Chalk,Talk
<b>Total</b>						<b>16</b>
<b>CUMULATIVE PROPOSED PERIODS</b>						<b>83</b>
<b>TextBooks:</b>						
S.No.	AUTHORS,BOOKTITLE,EDITION,PUBLISHER, YEAR OFPUBLICATION					
1	Dr R Nageswara Rao, Core Java: an Integrated Approach, Dreamtech Press, 2024					
2	Debasis Samanta, Monalisa Sarma, Joy with Java: Fundamentals of Object Oriented Programming, new edition Cambridge University Press, 2023.					
3	Anitha Seth, B.L.Juneja, JAVA one step ahead, First Edition, Oxford University Press, 2017.					
4	Paul Deitel, Harvey Deitel, Java 9 for Programmers, , 4th Edition, Pearson Education,2018					
<b>ReferenceBooks:</b>						
S.No.	AUTHORS,BOOKTITLE,EDITION, PUBLISHER, YEAR OFPUBLICATION					
1	Herbert Schildt, Java: The complete Reference 12th edition, McGraw Hill,2022.					
2	Y Daniel Liang, Introduction to Java programming, 7 <sup>th</sup> Edition, Pearson Education,2009					




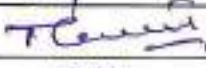

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WebDetails:	
1	<a href="https://nptel.ac.in/courses/106/105/106105191/">https://nptel.ac.in/courses/106/105/106105191/</a>
2	<a href="https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_012880464547618816347_shared/overview">https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_012880464547618816347_shared/overview</a>
3	<a href="https://www.javatpoint.com/java-tutorial">https://www.javatpoint.com/java-tutorial</a>

		Name	Signature with Date
i.	Faculty	1. Dr. B RAMA KRISHNA	
		2. Mr. V.SUBRAHMANYAM	
ii	Course Coordinator	Dr. G SUDHAKAR	
iii	Module Coordinator	Mr. K.V.N.A.S.M.PRASAD	
iv	Program coordinator	Dr. B RAMA KRISHNA	

  
PRINCIPAL