



BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(An AUTONOMOUS INSTITUTION, APPROVED BY AICTE-NEW DELHI, PERMANENTLY
AFFILIATED TO JNTUK-KAKINADA, ACCREDITED BY NAAC 'A' GRADE,
2 PROGRAMMES (CSE,EEE) ACCREDITED BY NBA (For A.Y 2023-24 to 2025-26)
Post Box: 26, Amalapuram 533201, Dr.B R Ambedkar Konaseema Dt., A.P.

BR23-CSE II YEAR I SEMESTER SYLLABUS

II Year I Semester

L	T	P	C
3	0	0	3

OBJECT ORIENTED PROGRAMMING THROUGH JAVA
(23CS3T03)

(Common to CSE, IT, CSE-(AI &DS), AI & ML branches)





Course Objectives:

The learning objectives of this course are to:

- identify Java language components and how they work together in applications
- Learn the fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries.
- learn how to extend Java classes with inheritance and dynamic binding and how to use exception handling in Java applications
- understand how to design applications with threads in Java
- understand how to use Java APIs for program development

Course Outcomes:

- Summarize the basic concepts of Java Programming Language (**Understand**)
- Apply the concepts of Object Oriented Programming (**Apply**)
- Use the basic principles to create Arrays and Implement Inheritance, Interfaces. (**Apply**)
- Determine Java programs using Packages to implement Exception Handlings (**Analyze**)
- Illustrate the concepts Strings, Multi Threading, JDBC Connectivity and Java FX GUI (**Analyze**)

					
Dr.N.Rama Krishnaiah, Professor of CSE,UCEK & Control of Examination JNTUK, kakinada.	Dr.C.Krishna Mohan, Professor of CSE,IIT, Kandi, Hyderabad.	Dr.P.Radha Krishna, Professor of CSE,NIT, Warangal	Mr.Rajesh Bobburi Chief Operating Officer, HighQ Labs Private Limited, Rajahmundry	Dr.Lakshmi Haritha Medida, Associate Professor, R.M.K.Engineering College,Kavaraipettai ,Tamilnadu	Dr.K.Srinivas Professor & HoD Department CSE, B.V.C.I.T.S. Batlapalem



BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(An AUTONOMOUS INSTITUTION, APPROVED BY AICTE-NEW DELHI, PERMANENTLY
AFFILIATED TO JNTUK-KAKINADA, ACCREDITED BY NAAC 'A' GRADE,
2 PROGRAMMES (CSE,EEE) ACCREDITED BY NBA (For A.Y 2023-24 to 2025-26)
Post Box: 26, Amalapuram 533201, Dr.B R Ambedkar Konaseema Dt., A.P.

UNIT I

Object Oriented Programming: Basic concepts, Principles,
Program Structure in Java: Introduction, Writing Simple Java Programs, Elements or
Tokens in Java Programs, Java Statements, Command Line Arguments, User Input to
Programs, Escape Sequences Comments, Programming Style.





Data Types, Variables, and Operators :Introduction, Data Types in Java, Declaration of
Variables, Data Types, Type Casting, Scope of Variable Identifier, Literal Constants,
Symbolic Constants, Formatted Output with printf() Method, Static Variables and Methods,
Attribute Final, **Introduction to Operators**, Precedence and Associativity of Operators,
Assignment Operator (=), Basic Arithmetic Operators, Increment (++) and Decrement (- -)
Operators, Ternary Operator, Relational Operators, Boolean Logical Operators, Bitwise
Logical Operators.

Control Statements:Introduction, if Expression, Nested if Expressions, if-else
Expressions, Ternary Operator?:, Switch Statement, Iteration Statements, while
Expression, do-while Loop, for Loop, Nested for Loop, For-Each for Loop, Break
Statement, Continue Statement.

UNIT II

Classes and Objects: Introduction, Class Declaration and Modifiers, Class Members,
Declaration of Class Objects, Assigning One Object to Another, Access Control for Class
Members, Accessing Private Members of Class, Constructor Methods for Class,
Overloaded Constructor Methods, Nested Classes, Final Class and Methods, Passing
Arguments by Value and by Reference, Keyword this.

Methods: Introduction, Defining Methods, Overloaded Methods, Overloaded Constructor
Methods, Class Objects as Parameters in Methods, Access Control, Recursive Methods,
Nesting of Methods, Overriding Methods, Attributes Final and Static.

					
Dr.N.Rama Krishnaiah, Professor of CSE,UCEK & Control of Examination JNTUK, kakinada.	Dr.C.Krishna Mohan, Professor of CSE,IIT, Kandi, Hyderabad.	Dr.P.Radha Krishna, Professor of CSE,NIT, Warangal	Mr.Rajesh Bobburi Chief Operating Officer, HighQ Labs Private Limited, Rajahmundry	Dr.Lakshmi Haritha Medida, Associate Professor, R.M.K.Engineering College,Kavaraipettai ,Tamilnadu	Dr.K.Sriniva Professor & HoD Department CSE, B.V.C.I.T.S. Batlapalem



BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(An AUTONOMOUS INSTITUTION, APPROVED BY AICTE-NEW DELHI, PERMANENTLY
AFFILIATED TO JNTUK-KAKINADA, ACCREDITED BY NAAC 'A' GRADE,
2 PROGRAMMES (CSE,EEE) ACCREDITED BY NBA (For A.Y 2023-24 to 2025-26)
Post Box: 26, Amalapuram 533201, Dr.B R Ambedkar Konaseema Dt., A.P.

UNIT III

Arrays: Introduction, Declaration and Initialization of Arrays, Storage of Array in Computer Memory, Accessing Elements of Arrays, Operations on Array Elements, Assigning Array to Another Array, Dynamic Change of Array Size, Sorting of Arrays, Search for Values in Arrays, Class Arrays, Two-dimensional Arrays, Arrays of Varying Lengths, Three-dimensional Arrays, Arrays as Vectors.

Inheritance: Introduction, Process of Inheritance, Types of Inheritances, Universal Super Class-Object Class, Inhibiting Inheritance of Class Using Final, Access Control and Inheritance, Multilevel Inheritance, Application of Keyword Super, Constructor Method and Inheritance, Method Overriding, Dynamic Method Dispatch, Abstract Classes, Interfaces and Inheritance.





Interfaces: Introduction, Declaration of Interface, Implementation of Interface, Multiple Interfaces, Nested Interfaces, Inheritance of Interfaces, Default Methods in Interfaces, Static Methods in Interface, Functional Interfaces, Annotations.

UNIT IV

Packages and Java Library: Introduction, Defining Package, Importing Packages and Classes into Programs, Path and Class Path, Access Control, Packages in Java SE, Java.lang Package and its Classes, Class Object, Enumeration, class Math, Wrapper Classes, Auto-boxing and Auto-unboxing, Java util Classes and Interfaces, Formatter Class, Random Class, Time Package, Class Instant (java.time.Instant), Formatting for Date/Time in Java, Temporal Adjusters Class, Temporal Adjusters Class.

Exception Handling: Introduction, Hierarchy of Standard Exception Classes, Keywords throws and throw, try, catch, and finally Blocks, Multiple Catch Clauses, Class Throwable, Unchecked Exceptions, Checked Exceptions.

Java I/O and File: Java I/O API, standard I/O streams, types, Byte streams, Character streams, Scanner class, Files in Java(Text Book 2)

					
Dr.N.Rama Krishnaiah, Professor of CSE,UCEK & Control of Examination JNTUK, kakinada.	Dr.C.Krishna Mohan, Professor of CSE,IIT, Kandi, Hyderabad.	Dr.P.Radha Krishna, Professor of CSE,NIT, Warangal	Mr.Rajesh Bobburi Chief Operating Officer, HighQ Labs Private Limited, Rajahmundry	Dr.Lakshmi Haritha Medida, Associate Professor, R.M.K.Engineering College,Kavaraipettai ,Tamilnadu	Dr.K.Sriniva Professor & HoD Department CSE, B.V.C.I.T.S. Batlapalem



BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(An AUTONOMOUS INSTITUTION, APPROVED BY AICTE-NEW DELHI, PERMANENTLY
AFFILIATED TO JNTUK-KAKINADA, ACCREDITED BY NAAC 'A' GRADE,
2 PROGRAMMES (CSE,EEE) ACCREDITED BY NBA (For A.Y 2023-24 to 2025-26)
Post Box: 26, Amalapuram 533201, Dr.B R Ambedkar Konaseema Dt., A.P.

UNIT V

String Handling in Java: Introduction, Interface Char Sequence, Class String, Methods for Extracting Characters from Strings, Comparison, Modifying, Searching; Class String Buffer. **Multithreaded Programming:** Introduction, Need for Multiple Threads Multithreaded Programming for Multi-core Processor, Thread Class, Main Thread-Creation of New Threads, Thread States, Thread Priority-Synchronization, Deadlock and Race Situations, Inter-thread Communication - Suspending, Resuming, and Stopping of Threads.

Java Database Connectivity: Introduction, JDBC Architecture, Installing MySQL and MySQL Connector/J, JDBC Environment Setup, Establishing JDBC Database Connections, Result Set Interface

Java FX GUI: Java FX Scene Builder, Java FX App Window Structure, displaying text and image, event handling, laying out nodes in scene graph, mouse events (Text Book 3)

Text Books:





- 1) JAVA one step ahead, Anitha Seth, B.L.Juneja, Oxford.
- 2) Joy with JAVA, Fundamentals of Object Oriented Programming, Debasis Samanta, Monalisa Sarma, Cambridge, 2023.
- 3) JAVA 9 for Programmers, Paul Deitel, Harvey Deitel, 4th Edition, Pearson.

References Books:

- 1) The complete Reference Java, 11th edition, Herbert Schildt, TMH
- 2) Introduction to Java programming, 7th Edition, Y Daniel Liang, Pearson

Online Resources:

- 1) <https://nptel.ac.in/courses/106/105/106105191/>
- 2) https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_012880464547618816347_shared/overview

					
Dr.N.Rama Krishnaiah, Professor of CSE, UCEK & Control of Examination JNTUK, Kakinada.	Dr.C.Krishna Mohan, Professor of CSE, IIT, Kandi, Hyderabad.	Dr.P.Radha Krishna, Professor of CSE, NIT, Warangal	Mr.Rajesh Bobburi, Chief Operating Officer, HighQ Labs Private Limited, Rajahmundry	Dr.Lakshmi Haritha Medida, Associate Professor, R.M.K.Engineering College, Kavaraipettai, Tamilnadu	Dr.K.Srinivas Professor & HoD Department CSE, B.V.C.I.T.S, Batlapalem