

**SKR & SKR Govt. College for Women(A), Kadapa.**  
**NAAC Re- accredited – B Level**  
**II B.Sc III SEMESTER**  
**OBJECT ORIENTED PROGRAMMING USING JAVA**

**UNIT – I:**

**FUNDAMENTALS OF OBJECT – ORIENTED PROGRAMMING:** Object Oriented paradigm –Basic concepts of Object Oriented Programming – Benefits of OOP –Applications of OOP.

**Overview of Java Language:** Simple Java Program – Java Program Structure – Java Tokens- Java Statements – Implementing a Java Program – Java Virtual Machine – Command Line Arguments.

**Constants, Variables and Data types:** Constants – Variables – Data types – Declaration of Variables- Giving Values to variables- Scope of Variables-Symbolic Constants-Type Casting.

**UNIT – II:**

**Operators and Expressions:** Arithmetic Operators – Relational Operators- Logical Operators – Assignment Operators – Increment and Decrement Operators – Conditional Operators – Bitwise Operators – Special Operators – Arithmetic Expressions – Evaluation of Expressions – Precedence of Arithmetic Operators – Operator Precedence and Associativity.

**Decision Making and Branching:** Decision Making with If statement – Simple If Statement-If else Statement-Nesting If Else Statement- the Else If Ladder-The switch Statement – The ?: operator.

**Decision Making and Looping:** The while statement – The do statement – The for statement – Jumps in Loops, labelled loops.

**UNIT – III:**

**Class, Objects and Methods:** Defining a Class – Fields Declaration – Methods Declaration – Creating Objects – Accessing class members – Constructors – Methods Overloading – Static Members – Nesting of Methods, Inheritance – Overriding Methods – Final Variables and Methods – Final Classes – Abstract Methods and Classes – Visibility Control.

**Arrays, Strings and Vectors:** One-dimensional Arrays-creating an Array – Two dimensional Arrays – Strings – Vectors – Wrapper Classes – Enumerated Types.

**UNIT – IV:**

**Interfaces:** Multiple Inheritance - Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface Variables.

**Packages:** Java API packages – Using system Packages – Naming Conventions – Creating Packages – Accessing a Package – Using a Package – Adding a Class to a Package – Hiding Classes – Static Import.

**Multithreaded Programming:** Creating Threads – Extending the Thread Class – Stopping and Blocking a Thread – Life Cycle of a Thread –Using Thread Methods –Thread Exceptions – Thread Priority – Synchronization.

**UNIT – V:**

**Managing Errors and Exceptions:** Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch Statements – Using Finally Statement – Throwing our own Exceptions – Using Exceptions for debugging.

**Applet Programming:** How Applets differ from Applications – Preparing to write Applets – Building Applet Code – Applet Life Cycle – Creating an executable Applet – Designing a WebPage – Applet Tag – Adding Applet to HTML file – Running the Applet – More about Applet Tag – Passing parameters to Applets – Aligning the display – More about HTML tags – Displaying Numerical Values – Getting Input from the user.

**Reference Books:**

1. E.Balagurusamy, Programming with JAVA, A primer, 3e, TATA McGraw-Hill Company.
2. John R. Hubbard, Programming with Java, Second Edition, Schaum's outline Series, TATA McGraw-Hill Company.
3. Deitel &Deitel. Java TM: How to Program, PHI (2007)
4. Java Programming: From Problem Analysis to Program Design- D.S Mallik
5. Object Oriented Programming Through Java by P. Radha Krishna, Universities Press (2008)

**SKR & SKR Govt. College for Women(A), Kadapa.**  
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**II B.Sc IV SEMESTER**  
**DATA STRUCTURES**

**UNIT I:**

**Concept of Abstract Data Types (ADTs)-** Data Types, Data Structures, Storage Structures, Primitive and Non-primitive Data Structures, Linear and Non-linear Data Structures.

**Linear Lists** – ADT, Array and Linked representations, Pointers.

**Linked Lists:** Single Linked List, Double Linked List, Circular Linked List, applications

**UNIT II:**

**Stacks:** Definition, ADT, Array and Linked representations, Implementations and Applications

**Queues:** Definition, ADT, Array and Linked representations, Circular Queues, Dequeues, Priority Queues, Implementations and Applications.

**UNIT III:**

**Trees:** Binary Tree, Definition, Properties, ADT, Array and Linked representations, Implementations and Applications. Binary Search Trees (BST) – Definition, ADT, Operations and Implementations, BST Applications. Introduction to Threaded Binary Trees, Heap trees.

**UNIT IV:**

**Graphs** – Graph and its Representation, Graph Traversals, Connected Components, Minimal Spanning Trees, Basic searching Techniques.

**UNIT- V:**

**Sorting and Searching:** Selection, Insertion, Bubble, Merge, Quick, Heap sort, Sequential and Binary Searching.

**REFERENCE BOOKS:**

1. D S Malik, Data Structures Using C++, Thomson, India Edition 2006.
2. Sahni S, Data Structures, Algorithms and Applications in C++, McGraw-Hill, 2002.
3. Samanta D, Classic Data Structures, Prentice-Hall of India, 2001.
4. Heilman G I,. Data Structures and Algorithms with Object-Oriented Programming, Tata McGraw-Hill. 2002. (Chapters I and 14).
5. Tremblay P, and Sorenson P G, Introduction to Data Structures with Applications, Tata McGraw-Hill.

**SKR & SKR Govt. College for Women(A), Kadapa.**  
**NAAC Re- accredited – B Level**  
**Semester - III**  
**Foundation Course-5 Information & Communication Technology–2**  
**(Internet Fundamentals and Web Tools)**  
**(Common for All B.A/B.Com/B.Sc Programs)**

**Unit-I: Fundamentals of Internet :** Networking Concepts, Data Communication – Types of Networking, Internet and its Services, Internet Addressing – Internet Applications – Computer Viruses and its types – Browser –Types of Browsers.

**Unit-II: Internet Applications:** Using Internet Explorer, Standard Internet Explorer Buttons, Entering a Web Site Address, Searching the Internet – **Introduction to Social Networking:** Twitter, Tumblr, LinkedIn, Facebook, Flickr, Skype, Yelp, Vimeo, Yahoo!, Google+, Youtube, WhatsApp, etc.

**Unit-III: E-Mail :** Definition of E-mail - Advantages and Disadvantages – User IDs, Passwords, Email Addresses, Domain Names, Mailers, Message Components, Message Composition, Mail Management, Email Inner Workings.

**Unit IV: WWW-** Web Applications, Web Terminologies, Web Browsers, URL – Components of URL, Searching WWW – Search Engines and Examples.

**Unit V: Basic HTML:** Basic HTML – Web Terminology – Structure of a HTML Document – HTML, Head and Body tags – Semantic and Syntactic Tags – HR, Heading, Font, Image and Anchor Tags –Different types of Lists using tags – Table Tags, Image formats – Creation of simple HTML Documents.

**References:**

1. Raymond Green Law and Ellen Hepp, Fundamentals of the Internet and the World Wide Web, TMH Publishers.