Sri Sathya Sai College for Women, Bhopal
(An Autonomous College Affiliated to Barkatullah University Bhopal)
Department of Higher Education, Govt. of M.P.
Under Graduate Syllabus (Annual Pattern)
As recommended by Central Board of Studies and approved by the Governor of M. P.
wef 2022-2023
(Session 2023-24)
(NEP-2020)

Class	**BCA**
Year	**II Year**
Subject	**Computer Applications**
Course Title	**Internet Applications using Java Programming**
Course Type	**Minor**
Credit Value	**4**
Max. Mark	**30+70 (Minimum Marks 35)**

Course Outcome: After the completion of this course, a student shall be able to:

- Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.
- Read and make elementary modifications to Java programs that solve real-world problems.
- Validate input in a Java program.
- Design and use basic applet for web page.

Particular

Unit I	**The Java Environment:** History and features of java, C++ Vs java, OOps concept, how java works, the concept of PATH and CLASS PATH, a simple program, its compilation and execution, JAVA Program structure, Java Virtual Machine concepts, java platform overview, Primitive data types, variables and constants, operators, expression, statement-branching, looping and jumping, labeled statements. **Object Oriented Programming in Java:** Classes, objects and methods: defining a class, adding variables and methods, creating objects, constructor, Instances, field and methods initialization by constructors, Copy constructor, memory allocation and garbage collection in java, keywords, access methods, Arrays, String and String buffer classes, Wrapper classes, using the JDK tools.
Unit II	**Inheritance:** Inheritance basics, Super class, Sub-class, Method overloading, abstract classes. **Interfaces:** Defining an interface, Implementing & applying interfaces, variables in interfaces, extending interfaces. **Multithreading and Exception Handling:** Basic idea of multithreaded programming; The lifecycle of a thread, Creating thread with the thread class and runnable interface, Thread synchronization, Thread scheduling, Basic idea of exception handing: The try, catch and throw, throws.

Unit III	**Applet programming:** Local and Remote Applets, Applet Vs Application, creating and executing java applets, inserting applets in a web page, java security, passing parameter to applets, Aligning the Display, HTML Tags & Applet Tag, Getting Input from User. **The AWT:** The class hierarchy of window fundamentals; The basic user interface components- Label, Button, Check Box, Radio Button, Choice menu, Text area, Scroll list, Scroll bar, Frame; Layout managers- flow layout, Grid layout, Border layout, Card layout.
Unit IV	**The Java Event Handling Model:** Java's event delegation model, ignoring the event, Self-contained events, Delegating events, The event class hierarchy, The relationship between interface, methods called, parameters and event source; Adapter classes, Event classes action Event, Adjustment Event, Container Event, Focus Event, Item Event, Mouse Event, Text Event, Window Event. **Networking:** basics, networking classes and interfaces, using java.net package, TCP/IP and datagram programming.
Unit V	**Input/ Output:** Exploring Java i.o., Directories, stream classes The Byte Stream: Input stream, output stream, file input stream, file output stream, print stream, Random access file, character streams, Buffered reader, buffered writer, print writer, serialization. **JDBC:** JDBC-ODBC bridge, The connectivity model, The driver manager, Navigating the result set object contents, java.sql package, The JDBC exception classes, Connecting to Remote database.

Suggestion Books:

- Schildt java Complete Reference TMH
- Das Rashmikanta Core Java, IE, Vikas
- Bansal Nitin, Ajit Kumar, A Simplified approach to Java Programming, KALYANI
- Naughton & Schildt "The Complete Reference Java 2", Tata McGraw Hill
- Deitel "Java- How to Program:", Asia
- Horstmann & Cornell "Core Java 2" (Vol I & II), Sun Microsystems
- Ivan Bayrosss "Java 2.0": BPB publications
- Ivor Horton's "Beginning Java 2, JDK 5 Ed., Wiley India.
- Book published by M.P. Granth Academy, Bhopal

Suggestive digital platform web links

- https://www.youtube.com/watch?v=CFD9EFcNZTQ
- https://www.youtube.com/watch?v=7WhnYwoBY24
- http://www.mphindigranthacademy.org/

Suggested equivalent online courses

- Programming in Java https://youtube/Jd1fJy90GY
- The Complete Java Certification Course https://www.udemy,com/course/master-practical-java-development/

Scheme of Marks:

Maximum Marks: 100		
Continuous Comprehensive Evaluation (CCE): 30 marks, Term End Exam Theory: 70 marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE):	Class Test Assignment/ Presentation	**30**
External Assessment: University Exam Section Time:03.00 Hours	**Section (A)** Very Short questions **Section (B)** Short questions **Section (C)** Long questions	**70**
		Total 100

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Class	**BCA**
Year	**II Year**
Subject	**Computer Applications**
Course Title	**Java Programming Lab**
Course Type	**Minor**
Credit Value	**2**
Max. Mark	**30+70 (Minimum Marks 35)**

Course Outcome: After the completion of this course, a student shall be able to do the following:

- Develop simple applications of java.
- Implementation and use of conditional statement
- Learn to formulate iterative solutions and array processing algorithms for problems.
- Learn to implement method Overloading and Overriding.
- Implementation of inheritance and interface in java.
- Develop a small applet program using awt.

Particular

List of Practicals:
Given the problem statement, students are required to write code in Java, execute and test it. Students should be given assignment on following:

1. Write a program to print numbers in words using Nested if and switch Case.
2. Write a program called PassFail which prints "PASS" if the int variable "mark' is more than or equal to 50; or prints "FAIL" otherwise.
3. Write a program called OddEven which prints "Odd Number" if the int variable "number" is odd, or "Even Number" otherwise.
4. Write a Program to find sum & average of 10 no. using arrays.
5. Write a program to display reverse of a digit no. using array.
6. Write a program to display grade according to the marks obtained by the student.
7. Find the factorial of number if number is given by user using command line argument.
8. Write a program to print Fibonacci series.
9. Write a program to display tables from 2 to 10.
10. Write a program to take an input from user and check given number is prime or not.
11. Write a program to implement method overriding.
12. Write a program to convert given string into uppercase and lowercase and get the length of string using array.
13. Write a program to overload volume method to find out volume of cube and cuboid.
14. Write a program to design a class using abstract Methods and Classes.
15. Write a program to implement multiple inheritance by using interface.
16. Write a program to create a package of your name and use that package in a class.

17. Write a program to implement parameterized constructor with default argument.
18. Define an exception called "Mark out of Bound" exception that is thrown if the entered marks are greater than 100.
19. Develop a simple real life application to illustrate the use of multithreading.
20. Design an applet that takes three numerical values as input from the user and then displays the largest of those three numbers on the screen.

Suggestion Books:

- Naughton & Schildt "The Complete Reference Java 2", Tata McGraw Hill
- Java EE 6 for Beginners Sharanam Shah, Vaishali Shah, Shroff Publishers and Distributor

Reference Books:

- Java EE Project using EJB 3, JPA and struts 2 for beginners Shah, SPD
- Java Programming, A Practical Approach, C Xavier, McGraw Hill
- Java Server Faces, A Practical Approach for beginners, B M Harwani, Eastern Economy Edition (PHI).
- Advanced Java Technology, Savaliya, Dreamtech

Suggested Digital Platforms Web links:

- https://www.youtube.com/watch?v=CFD9EFcNZTQ
- https://www.youtube.com/watch?v=7WhnYwoBY24

Suggested equivalent online courses

- Programming in Java https://youtube/Jd1fJy90GY
- The Complete Java Certification Course https://www.udemy,com/course/master-practical-java-development/

Scheme of Marks:

Maximum Marks: 100		
Internal Assessment :	Class Interaction / Quiz Attendance Assignments (Charts / Model Seminar / Rural Service / Technology Dissemination / Report of Excursion / Lab Visits / Survey / Industrial visit)	**30**
External Assessment:	Viva Voce on Practical Practical Record File Table Work / Experiments	**70**
		Total 100