Marwadi UNIVERSITY

**Syllabus of Diploma Engineering**

**Computer Engineering**

**Semester-IV**

**Subject Code: 09CE1403**

**Subject Name: Java Programming**

**Objective:** Java is computer programming language. The main objective is to teach all the basic OOPs concepts, techniques, real world scenarios using top down approach and java programs that solve practical.

**Credits Earned:** 3 Credits

**Course Outcomes:** After completion of this course, student will be able to

- Understand OOP (Object-Oriented Programming) Concepts like defining classes, invoking methods, Objects, class libraries etc.
- Understand all Fundamental features like interfaces, libraries,
- Collections.
- To study exception handling methods.
- Understand Multithreading.
- Students can solve real world problems through programs

**Pre-requisite of course:** NA

**Teaching and Examination Scheme**

| Teaching Scheme (Hours) | | | Credits | Theory Marks | | | Tutorial/ Practical Marks | | Total Marks |
|---|---|---|---|---|---|---|---|---|---|
| Theory | Tutorial | Practical | | ESE | IA | CSE | Viva | Term work | |
| 0 | 0 | 6 | 3 | 00 | 30 | 20 | 25 | 25 | 100 |

| Unit | Topics | Contact Hours |
|---|---|---|
| 1 | **Java Overview**<br><br>Basic Java Introduction ,Java Features, Java Virtual Machine(JVM),Byte code, Java Development Kit(JDK),Java Operator ,Data Types, Control Statements-Whie,do-while, Switch condition, for loops and continue statement | 16 |
| 2 | **Array and String**<br><br>Single array and Multidimensional Array, Different classes - String and String Buffer class, Command line argument, Scanner Class, Various String operations, Wrapper class | 10 |
| 3 | **Classes, Object and Methods**<br><br>Class ,Object, Object reference, Constructor, Method Overriding and Overloading, Constructor Overloading, Passing and Returning object form Method, new , this and static keyword, finalize() method, operator Access control, modifiers, Nested class, Inner class, Anonymous inner class, Abstract class. | 23 |
| 4 | **Inheritance and Interfaces:**<br><br>Overview of Inheritance, constructor in inheritance, Data members and Method, Different types of inheritance, Multilevel Inheritance – method overriding ,explain Final keywords, Implementation of an interface, instanceof operator, Interface reference, Interface inheritanc,difference between Abstract Class and interface, Introduction of Multithread programming, Different interface and Thread classes | 23 |
| 5 | **Java File Handling**<br><br>Overview of different Stream(Byte Stream, Character stream) Readers and Writers class, File Class, File InputStream and File Output Stream .InputStreamReader and OutputStreamWriter, FileReader and Writer, Buffered Reader class, Exception Handling, Collection Classes | 12 |
| | **Total Hours** | **84** |

**References:**

1. Java 7 Programming Black Book by Kogent Learning Solutions Inc,DreamTech press
2. Java Fundamentals A comprehensive introduction By Herbert Schildt, Dale Skrien, McGraw Hill Education.
3. Programming with Java A Primer – E.Balaguruswamy,Mc Grawhill
4. The Complete Reference, Java 2 (Fourth Edition),Herbert Schild, - TMH.
5. Core Java Volume-I Fundamentals Horstmann & Cornell, - Pearson Education. - Eight Edition
6. Head First Java by Kathy Sierra, Bert Bates, O'Reilly publications

**Suggested List of Experiments:**

| Sr. No. | Unit No. | Name of Topics | Contact Hours |
|---|---|---|---|
| 1 | 1 | Write a java program to Print HelloWorld with Single and Multiple Main in a java program. Elaborate each statement of given program. | 2 |
| 2 | 1 | Write a program to print the ascii value of a given character. | 1 |
| 3 | 1 | Write a Java programs to swap two numbers without using a temporary variable and with using temporary variable. | 1 |
| 4 | 1 | Write a java program to give the examples of operators.<br>a. Logical operators<br>b. Bitwise operators<br>c. Conditional operators<br>d. Relational operators<br>e. Increment and decrement operator<br>Also explain priority of operator. | 2 |
| 5 | 1 | Write a java program to convert rupees to dollar. 60Rupees=1 dollar. | 1 |
| 6 | 1 | Write a Java Program to check prime numbers. Also study syntax of if statement. | 1 |
| 7 | 1 | Write a program to define and initialize a variable of type byte to 1, and then successively multiply it by 2 and | 1 |

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| | | display its value 8 times. Explain the reason for the last result. Also study different types of loop. | |
| 8 | 1 | Write a java program to calculate percentage marks of the students if marks of 6 subjects are given. | 1 |
| 9 | 1 | Write a program to display a random choice from a set of six choices for Breakfast(You could use example like scrambled,eggswaffles,fruit,cereal,toast,or yogurt). | 2 |
| 10 | 1 | Program to generate a randomly sequence of capital letters that does not include vowels. | 1 |
| 11 | 1 | Write a java pattern<br>*<br>**<br>***<br>****<br>***** | 2 |
| 12 | 1 | Write a java program to accept a line and check how many vowels and constant are there in line. | 1 |
| 13 | 2 | Write program to convert a char array to a string in Java. Study Array and String. | 4 |
| 14 | 2 | Write a java program to count all words in a string. | 3 |
| 15 | 2 | Write a java program to find total length of string and print second half of the string. | 3 |
| 16 | 3 | Write a program to create a one class called student having data members like student name,enr,spi,city,branch define construct which can int data member define a method for following functions:<br>get()<br>disp()<br><br>Understand Basic Concept of Class, Object and Method. | 4 |
| 17 | 3 | Write a java program for method overloading example. | 4 |
| 18 | 3 | Write a java program for method overriding example. | 3 |
| 19 | 4 | Study Inheritance in Java. Write a single level and Multilevel inheritance java program. | 3 |

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| 20 | 4 | Write a Multiple Inheritance java program. Study types of inheritance in Java. | 3 |
| 21 | 3 & 4 | Write a program to Create one class named 'x' and create a sub class 'y'. Which is extends from class 'x'. And use these classes in 'inherit' class. | 2 |
| 22 | 4 | Write a java Interface example. | 3 |
| 23 | 4 | Write a java program example for 'super' keyword. | 3 |
| 24 | 3 & 4 | Write a java Encapsulation example program | 2 |
| 25 | 3 & 4 | Write a java program to create a one class named shape. In this class we have three another sub classes circle, triangle and square each class have two member function named erase () and draw(). Create these using polymorphism concepts. | 4 |
| 26 | 4 | Write a java Run time polymorphism example program. Study Runtime Polymorphism use. | 3 |
| 27 | 3 & 4 | Write a java program to create one room class, different attributes of this class is room no, room area, room type and AC machine. In this class the member functions are set data and display data. | 4 |
| 28 | 3 | Write a java program to demonstrate methods and static variables. | 2 |
| 29 | 3 & 4 | Write a java program that illustrates interface inheritance. Interface P is extended by P1 and P2.Interface P12 inherits from both P1 and P2. Each interface declares one method and one constant. Class Q implements P12. Instantiate Q and invoke each of its methods. Each method displays one of the constants. | 4 |
| 30 | 3 | Write java Program to Demonstrate Abstract class. | 2 |
| 31 | 5 | Write a java program using BufferedInputStream, FileInputStream, BufferedOutputStream and FileOutputStream to copy all Content of one file File1.txt to file File2.txt. | 3 |
| 32 | 5 | Create a class called Student. Write a student manager program to manipulate the student information from files by using FileOutputStream and FileInputStream. | 2 |
| 33 | 5 | Refine the student manager program to use the student information from files by using the BufferedReader and BufferedWriter. | 3 |

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| 34 | 5 | Refine the student manager program to use the student information from files by using the DataInputStream and DataOutputStream. | 2 |
| 35 | 5 | Write a program of swap two elements in a linked list. | 2 |

**Instructional Method:**

a. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

b. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

c. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

d. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

**Supplementary Resources:**

1. http://www.oracle.com/technetwork/java/javase/downloads/index.html
2. http://docs.oracle.com/javase/specs/jls/se7/html/index.html
3. http://docs.oracle.com/javase/tutorial/java/index.html
4. http://www.tutorialspoint.com/java/
5. http://www.learnjavaonline.org/
6. http://www.c4learn.com/javaprogramming/
7. http://www.learn-java-tutorial.co