



GOVERNMENT OF TAMILNADU
DIRECTORATE OF TECHNICAL EDUCATION, CHENNAI
STATE PROJECT COORDINATION UNIT
(Established under Canada India Institutional Cooperation Project)

CURRICULUM

Course Name	Core Java
Course Code	CSE/2020/012
Course Duration	80 Hours
Minimum Eligibility Criteria and Pre-requisites(if any)	ITI/10 th +2/Diploma/Graduates Basics concepts of java
Course Objectives	The main objectives of the course is to : <ul style="list-style-type: none"> • Learn Object Oriented Programming System(OOPS) concepts. • Explain various program development steps including the concepts of constants, variables, data types, operators, various i/o operations. • Develop Java based applications.
Course Outcomes	At the end of the training, the students will be able to : <ul style="list-style-type: none"> • Code in JAVA by implementing various I/O operations, different looping and branching statements, arrays, user defined functions, string handling functions, structure, union and pointers. • Apply various OOPS concepts, develop applications.
Expected Job Roles	Java Programmer

TEACHING AND SCHEME OF EXAMINATION

Course Code	Course Name	Hours		Assessment Marks		Duration of Examination
				Min	Max	
CSE/2020/012	Core Java	Theory	30	10	20	3 Hours
		Practical	50	40	80	
		Total	80	50	100	

**CSE/2020/012 - CORE JAVA
DETAILED SYLLABUS**

UNIT NO	MODULES	NO.OF.HOURS THEORY
I	OVERVIEW OF OOPs PROGRAMMING	
1.1	Introduction to OOPs- Objects and Classes-Data abstraction and Encapsulation ,Inheritance, Polymorphism, Dynamic binding, Message Passing-Types of Java Program, creating and executing a Java Program, Java Tokens: Keywords-character set, Identifiers, Literals, Separator, Java Environment-JDK,API-VM. Defining a class – Methods – Creating objects – Accessing class members.	10
1.2	Arrays-one dimensional array-creating an array-array Processing-Multidimensional Array. Constructors – Method overloading – Static members – Nesting of Methods– this keyword – command line input.	
II	CONTROL STRUCTURES AND INHERITANCE	
2.1	Decision making and Branching: simple if-if-else statement-Nested if – else –else if Ladder – switch statement. Looping-while loop- do-while loop-for loop-break and continue statement. Inheritance :Defining a subclass-deriving a sub class-Types of inheritance. Interface: Multiple inheritance-defining Interface –Extending a interface-Implementing Interface-Access interface variables.	7
2.2	Final class, Finalizer methods-abstract methods and classes-visibility control.	
III	PACKAGES,APPLETS AND AWT CONTROLS:	
3.1	Packages: Java API packages-System Packages-Naming Conventions-Creating and accessing a Package-Adding Class to a Package.	
3.2	Applets :Introduction - Applets Life Cycle-Creating and executing an Applet-Applet tags in HTML—Aligning the display. AWT controls: Labels-Text Component-choice-scrollbar-buttons-checkboxes.	7
IV	EXCEPTION HANDLING,MULTITHREADING AND I/O STREAMS	
4.1	Exception Handling: Types of Errors-Basics of error handling-try-throw-catch blocks.	
4.2	Multithreading :Thread Life cycle -Thread methods-Thread priority-synchronization-implementing unable interface-thread scheduling. I/O streams: File –stream- Advantages - the Stream classes.	6
Total Theory Hours		30
Total Practical Hours		50
Total Hours		80

PRACTICAL (50 HOURS)

1. Write a program to print the individual digits of given 3-digit number.
2. Write a program that asks the user to enter two integers, obtains the numbers from the user, and then prints the larger number followed by the words "**is larger.**" If the numbers are equal, print the message "**These numbers are equal.**"
3. Write a program to read N numbers and find the largest and smallest numbers.
4. Write a program in Java to create a String object. Initialize this object with your name. Find the length of your name using the appropriate String method. Find whether the character 'a' is in your name or not; if yes find the number of times 'a' appears in your name. Print locations of occurrences of 'a'.
5. Write a program to show how a class implements two interfaces.
6. Write a Java program to create your own exception subclass that throws exception if the sum of two integers is greater than 99.
7. Write a program to create a text file using Byte stream classes.
8. Write a program to copy a file to another file.
9. Write a program that accepts a shopping list of four items from the command line and stores them in a vector. Write a Menu based Program to perform the following operations using vector
 - (i)To add an item at a specific location in the list.
 - (ii)To delete an item in the list.
 - (iii)To print the contents of the vector.
 - (iv)To delete all elements
 - (v)To add an item at the end of the vector.
10. a) Create a **String Buffer** object and illustrate how to append characters. Display the capacity and length of the string buffer.
b) Create a **String Buffer** object and illustrate how to insert characters at the beginning.
c) Create a **String Buffer** object and illustrate the operations of the append() and reverse() methods.
11. Write a program in Java with class *Rectangle* with the data fields width, length, area and colour. The length, width and area are of double type and colour is of string type. The methods are get_length(), get_width(), get_colour() and find_area().
12. Create two objects of Rectangle and compare their area and colour. If the area and colour both are the same for the objects then display " Matching Rectangles", otherwise display " Non-matching Rectangle".

13. Create a class to represent complex numbers. A complex number has the form real part + i * imaginary part. Provide constructor to enable an object of this class to be initialized when it is declared. Provide a no-argument constructor with default value in case no initializers are provided. Provide public methods for the following:
- Addition of two complex numbers
 - Subtraction of two complex numbers
 - Printing complex numbers in the form (a,b) where a is the real part and b is the imaginary part.
- (Pass objects as arguments)
14. Write a program to create a player class. Inherit the classes Cricket_player, Football_player and Hockey_player from player class.
15. Write a program to create a package for Book details giving Book Name, Author Name, Price, Year of Publishing. A color can be created by specifying the red, green, blue values as integer parameters to the constructor of class Color. The values range from 0 to 255. Provide three horizontal scroll bars and ask the user to select the values of the colors by dragging the thumb in the scroll bar. Using the color selected, draw rectangle.
16. Create an applet for simple calculator to perform Addition, Subtraction, Multiplication and Division using Button, label and Text field classes.
17. Draw a bar chart for the following details using Applets.
- | | | | | |
|---------|-------|---------|-------|---------|
| Subject | Tamil | English | Maths | Physics |
| Marks | 78 | 85 | 98 | 56 |
18. Write a Java program for generating two threads, one for printing even number and other for printing odd numbers.
19. a) Write a program to create a text file using Byte stream classes
b) Write a program to copy a file to another file.
20. Write a Java Program to connect to a database created in MS-ACCESS using JDBC Concept. Perform basic operations of Selection, Insertion and deletion on the database.

HARDWARE AND SOFTWARE REQUIREMENT

S.NO	LIST OF TOOLS /EQUIPMENTS/SOFTWARE
1	Desktop /Laptop computers
2	JRE/JDK

REFERENCE BOOKS

S.NO	NAME OF THE BOOK	AUTHOR	PUBLISHER
1.	Effective Java	Joshua Bloch	Addison-Wesley Professional
2.	Java Concurrency in Practice	Brian Goetz, Tim Peierls, Joshua Bloch,, Joseph Bowbeer,, David Holmes,, Doug Lea	Addison-Wesley Professional

ASSESSMENT AND CERTIFICATION

S.No	Criteria for assessment
1.	A trainee will be assessed based on the performance in End Examination for Theory and Practical conducted internally in the Project Polytechnic College for a duration of 3 hours
2.	A trainee must have 75% of attendance to appear for End examination in Theory and Practical.
3.	The assessment for theory part will be based on the marks scored in the end examination on the knowledge bank of questions (1 word/objective type questions)
4.	The assessment for practical part will be based on the marks scored in the end examination conducted by the Project Polytechnic and assessed by the Examiners approved by Strategic Plan Implementation Committee (SPIC) of the project polytechnic.
5.	The criteria for successful completion of training is every trainee should score 50% of marks in theory and practical examination.
6.	On successful completion of training , Certificate will be issued to the participants by the Directorate of Technical Education through the Project Polytechnic.

END EXAMINATION

ALLOCATION OF MARKS

S.No	Description	Max.Marks
1.	Theory Examination	20
2.	Practical Examination	
	a)Procedure	10
	b)Execution	30
	c)Output	20
	d)Record	20
Total Marks		100

THEORY MODEL QUESTION PAPER

CSE/2020/012 - CORE JAVA

(Maximum Marks : 20)

(N.B: Answer any **twenty** questions)

20 x 1 = 20 Marks

1. What is Object oriented programming?
2. What is data encapsulation?
3. What is JDK?
4. What is JVM?
5. What is API?
6. What is class?
7. What is keyword?
8. What is interface?
9. What is extends?
10. What is final class?
11. What is package
12. What is applet?
13. What is awt?
14. What is the use of exception?
15. What is multithreading?
16. What is the use of return keyword?
17. What is wrapper class?
18. What is reusability?
19. What is subclass?
20. What is class header?
21. What is the access specifier?
22. What will be initial value of object defined as a instances variable?
23. What is default constructor?
24. What is the static c variable?
25. What is instances method?