COURSE STRUCTURE

Course Code	COS3091B			
Course Category	Core			
Course Title	Lab on Core Java			
Teaching Scheme and Credits **Weekly load hrs.**	L	T	Laboratory	Credits
			4	2

Pre-requisites:
Basic programming knowledge of C and C++, concept of object-oriented programming.

Course Objectives:

1. To enable the students to understand the core principles of the Java Language and use visual tools to produce well designed, effective applications and applets.
2. To make students understand and learn the basic Java programming.
3. To make students build desktop-based applications using Java

Course Outcomes:
After completion of this course students will be able to:

1. Create Java application using object-oriented concepts.
2. Understand and apply the concepts of exception handling.
3. Apply the concepts of multithreading, java collections and file handling.

Course Contents:

Unit 1: Fundamentals of Java

Object, classes, abstraction, encapsulation, inheritance, polymorphism, Identifiers and Keywords Data Types in Java coding Conventions, Expressions in Java Control structures, decision making statements Arrays and its methods Garbage collection & finalize () method**.**

Unit 2: Java classes and Inheritance

Class, instance, methods, overriding, final, super - keywords, Define class with instance variables and methods Object creation of class accessing member of class Argument passing, Constructors Method overloading, static data, static methods, static blocks this keyword, Nested & Inner classes Wrapper Classes String (String Arrays, String Methods, String

Buffer), Super class & subclass, Abstract method and classes Method overriding, final keyword super keyword Down casting and up casting Dynamic method dispatch.

Unit 3: Packages and Interfaces

Importing classes User defined packages Modifiers & Access control (Default, public, private, protected, private protected), Implementing interfaces, User defined interfaces Adapter classes.

Unit 4: Exception handling

Types of Exceptions try, catch, finally, throw, throws keywords, creating your own exception Nested try blocks Multiple catch statements User defined exceptions.

Unit 5: Java Input Output

Java IO package File Class Byte/Character Stream Buffered, reader / writer File reader / writer Print writer File Sequential / Random Serialization and de serialization.

Unit 6: Applet and AWT

Applets Applet life cycle Creating applet Displaying it using Web Browser with appletwiewer.exe, The HTML APPLET Tag with all attributes.

AWT: Components and Graphics Containers, Frames and Panels Layout, Managers, Border Layout, Flow Layout, Grid Layout, Card Layout, AWT all Components Event Delegation Model, Event Source and Handlers, Event Categories, Listeners

Learning Resources:

Textbooks:

1. Horstman Cay, Cornell Gary, Core JavaTM2, Vol.1&2, Seventh Edition, Pearson education, 2004 Edition.
2. Herbert Schildt, The Complete Reference, Seventh Edition, Tata McGraw-Hill, 2007

Reference Books:

1. Java 2 Programming Black Book: AWT, Swing, Generics, XML, Sound, Animation, JDBC, Servlets, RMI, Threading, Sockets, Network and Java Beans by Steven Holzner, reprint, Dreamtech Press, 2008
2. Ivor Horton's Beginning Java 2, JDK 5 Ed, Wiley India by Ivor Horton, Jan. 2005

Supplementary Reading:

Web Resources:

1. https: //www.tutorialspoint.com ,
2. www.javatpoint.com www.javatpoint.com

MOOCs: Online courses for self-learning

Courses by NPTEL and MIT Open Courseware etc.

https://onlinecourses.nptel.ac.in/noc22_cs47/preview

Pedagogy:

- Power point presentations
- Videos
- Demonstrations
- Interactive discussion.
- Practical based learning,
- Project based learning,

Assessment Scheme:

Class Continuous Assessment (CCA): 60 marks

Formative Assessment Test – I (FAT - I)	Formative Assessment Test – II (FAT - II)	Mid Term Test
15	15	30

Term End Examination: 40 marks External

Sample Lab Assignments

Lab Assignments on Java Programming	
1	Write a program to check whether a given number is prime or not.

2	Write a program to accept range from command line argument & print the perfect numbers from the given range.
3	Write a program to calculate and print the first n Fibonacci numbers. (Accept n from command line).
4	Write a program to check whether a given text or number is palindrome or not.
5	Write a program to print the following outputs using for loops. 1 12 123 1234 12345
6	Write a program to accept employee information such as Emp_id, Name, Designation and Salary using parameterized constructor and display the same.
7	Create a class Account with members account no., acc type, cust name, balance & methods deposit, withdraw & show balance. Write a main class to accept all the details & display all details.
8	Write a program to accept five elements in an array and find the max and min from given numbers.
9	Write a Java program can contain two classes: Computer and Laptop. Both classes have their own constructors and a method. In main method create object of two classes and call their methods.
10	Create person class with data members as person_id & name. Derive two classes Student & faculty from it. The fields of Student are course name & fees paid. The fields of faculty are subject name & number of years' experience. Use proper method to accept values & override display method. (Using parameterized constructor)
11	Create a class mobile containing company name, mobile number & cost and write necessary member functions for the following: Search the mobile number with given name. Search the name with given telephone number. (Use method overloading)

12	Write a Java program to create a package for Book details giving Book Name, Price and Author name and import the created package using importing package where we can create the object of classes in this package.
13	Write a program to create interface A in this interface we have two methods display() which will display variables of class and print_pattern() which will print pattern. Implements this interface in another class named MyClass.
14	Write a java program to create two packages. In the first package create employee class with employee number, name & salary. In the second package create a class manager which is subclass of employee class having fields as department name & incentive. Create main class which will import these packages & display gross salary.
15	Accept two numbers a & b from command line argument & print output as a/b and handle all possible system defined exceptions.
16	Write a class Driver with attributes vehicle no, name & age. Initialize values through parameterized constructor. If age of driver is less than 18 then generate user-defined exception “Age Not Within the Range”.
17	Write a program to demonstrate use of user-defined exception, the Checking Account class contains a withdraw () method that throws an Insufficient Funds Exception.
18	Write a program to implement the concept of threading by extending Thread Class and also by implementing interfaces.
19	Write a program to set the priority of two above threads and check which thread executes first.
20	Write a program to print name, priority of a thread and change name of current to java thread and display the details of current thread.

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