

RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT-3	Sheet No. 1/5
Branch	COMPUTER HARDWARE AND MAINTAINANCE		Semester	VI	
Course Code		Course Name	Java Programming		
Course Outcome - 1	Apply basic programming constructs of Java language			Teach Hrs	Mark s
Learning Outcome 1	Explain fundamentals and application Programming environment of Java			6	10
Contents	Features of Object oriented programming, difference between object oriented and procedural oriented programming language, History, Features, and applications of Java, Java Editions, java environment (jdk, jde), structure of java program (application and applet), JVM (Java Virtual Machine), Execution process of java programs (interpreter and compilation), IDEs for java (netbean, eclipse)				
Method of Assessment	Internal: Mid semester theory examination (Pen paper test).				
Learning Outcome 2	Illustrate the building blocks of Java programming			10	10
Contents	<p>Introduction to objects and classes - defining a class, field declaration and method declaration, Data Types, Symbolic Constants, creating objects, accessing class members, constructor and object method invocation, Scope of class members - Instance and class, Type Casting, Math class.</p> <p>Operators: Arithmetic, Relational, Logical Assignments, Increment & Decrement , Conditional, Bit wises, Special Expressions & its Evaluation</p> <p>Control statements in Java Decision making Control Statement : if statement , Simple if statement , if...else statement , Nesting of if-</p>				

	else statement switch statement Iteration Control Statement : for loop , while loop, do-while loop, break, continue.				
Method Assessment	of External: End semester theory examination (Pen paper test).				
Learning Outcome 3	Develop simple java programs in Java programming environment	10	10		
Contents	Installation and setup of java, Installation of IDEs for java(netbean,eclipse). Compiling and running simple Java programs - Writing simple java programs displaying some output string , Programs taking input from the end user and giving desired output, programs using command line arguments, Programs using methods of Math class.				
Method Assessment	of Internal: Laboratory observation/Assignment, Internal viva				
Learning Outcome 4	Develop programs using basic programming constructs in Java.	12	10		
Contents	programming using branching statements-if, if-else, if-elif, nested if- else statements, ternary operators, switch statement programs using looping constructs- for, while, do-while constructs, break and continue statements.				
Method Assessment	of External: Laboratory observation and viva voce.				
RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT-3	Sheet No. 2/5
Branch	COMPUTER HARDWARE AND MAINTAINANCE		Semester	VI	
Course Code		Course Name	Java Programming		
Course Outcome - 2	Apply the concept of Object Oriented Programming in Java.		Teach Hrs	Mark s	

Learning Outcome 1	Illustrate the concept of Data hiding and Inheritance in Java.	6	10
Contents	Data hiding concept - public, private access. Inheritance: Concept of subclass and superclass, Types of Inheritance, Defining a subclass, subclass constructor, super keyword, Overriding Methods, Final Variables & Methods, Final Classes, Finalizer Methods, Protected access.		
Method Assessment	<i>of</i> External: End semester theory examination (Pen paper test).		
Learning Outcome 2	Explain Multiple inheritance and polymorphism	6	10
Contents	Abstract Method and Abstract Class in Java, Implementing multiple inheritance using Interfaces - Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interfaces Variables Polymorphism: Compile time polymorphism, runtime polymorphism, Static vs Dynamic binding		
Method Assessment	<i>of</i> External: End semester theory examination (Pen paper test).		
Learning Outcome 3	Demonstrate Arrays, String, Wrapper classes, inbuilt and user defined Packages	8	10
Contents	1D, 2D and multidimensional Arrays in Java- Declaration, creation, initialization and array length, variable size array, String class and its methods, StringBuffer class and its methods, Wrapper classes, methods of different wrapper classes and their uses. Introduction to 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		
Method Assessment	<i>of</i> Internal: Mid semester theory examination (Pen paper test).		
Learning Outcome 4	Experimenting with object oriented features of Java, Arrays, String and Wrapper classes.	14	10

Contents	Write programs demonstrating inheritance, polymorphism and data hiding features of java Write programs using arrays, strings and wrapper classes. Create package containing classes and interfaces.		
Method of Assessment	External: Laboratory observation and viva voce.		
RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT-3	Sheet No. 3/5
Branch	COMPUTER HARDWARE AND MAINTAINANCE	Semester	VI
Course Code		Course Name	Java Programming
Course Outcome - 3	Apply Multithreading and Exception handling features in Java		Teach Hrs
Learning Outcome 1	Illustrate multithreading concepts in java programs		8
Contents	Introduction, Creating Threads, Extending the Thread Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Thread Priority, Synchronization, implementing runnable interface, inter thread communication.		
Method of Assessment	External: End semester theory examination (Pen paper test).		
Learning Outcome 2	Interpret inbuilt and user defined exception handling		8
Contents	Types of Errors, Exceptions, Exception handling, implementation of keywords like try, catches, finally, throw & throws, built in exceptions, Creating own exception subclasses, importance of exception handling in practical implementation of live projects		
Method of Assessment	External: End semester theory examination (Pen paper test).		

Learning Outcome 3	Experimenting with multithreading and exception handling in Java.			12	10
Contents	Program using the multithreading feature of java, setting priority of a thread, Program demonstrating synchronization among various threads and inter thread communication.				
Method of Assessment	Internal: Laboratory observation/Assignment, internal viva				
RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE		FORMAT-3	Sheet No. 4/5	
Branch	COMPUTER HARDWARE AND MAINTAINANCE		Semester	VI	
Course Code		Course Name	Java Programming		
Course Outcome - 4	Apply Java I/O concepts for a given problem			Teach Hrs	Marks
Learning Outcome 1	Explain Concept of Stream classes and File handling in Java			12	10
Contents	Stream classes, Byte Stream Classes, Character Stream Classes, Performing interactive input / Output using stream classes, input/output exceptions File class, Creation of files, reading/ writing characters, reading/writing bytes, handling primitives data types, concatenating and buffering files, random access files				
Method of Assessment	External: End semester theory examination (Pen paper test).				
Learning Outcome 2	Demonstrate input output using stream classes and File handling in Java			12	10
Contents	Write programs for taking interactive input and output using stream classes. Write programs for creating a file, reading and writing				

	into a file. Write programs for buffering and concatenating files.			
Method of Assessment	External: Laboratory observation and viva voce.			
RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT-3	Sheet No. 5/5	
Branch	COMPUTER HARDWARE AND MAINTAINANCE	Semester	VI	
Course Code		Course Name	Java Programming	
Course Outcome - 5	Interpret Java networking Concepts		Teach Hrs	Marks
Learning Outcome 1	Explain the concepts of Socket Programming in Java		6	10
Contents	Networking basics : protocol, ports, TCP, UDP Fundamentals of socket and socket programming, Steps for client and server side socket programming, Socket class of java.io package, client side socket programming- open a socket, open an input stream and output stream to the socket, read from and write to the stream according to the server's protocol, close the streams, close the socket. Server side socket programming - serversocket class, Datagram sockets which use UDP.			
Method of Assessment	External: End semester theory examination (Pen paper test).			
Learning Outcome 2	Illustrate URL processing in Java		5	10
Contents	URL class and URL constructors, creating and parsing of URL, Reading directly from a URL, Connecting to URL, Reading from and writing to a URL connection.			
Method of Assessment	Internal: Short Answer Type Test/Quiz/Pen Paper Test			

REFERENCE BOOKS:

S No	Title & Publication	Author
1	Programming with Java	E. Balagurusami
2	Java Network Programming: Developing Networked Applications 4th Edition	Harold, Elliotte Rusty
3	Java The Complete Reference, Eleventh Edition	Herbert Schildt
4	Effective Java , Third edition	Joshua Bloch
5	https://www.javatpoint.com/java-tutorial	
6	https://docs.oracle.com/javase/tutorial/	
7	https://www.javatpoint.com/java-networking	
8	https://www.geeksforgeeks.org/java-networking/	
9	E-books/E-tools/Relevant software to be used as recommended by AICTE/NITTTR/RGPV	