

RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT-3	Sheet No. 1/5
Branch	Information Technology / Computer Science & Engineering		Semester	V	
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 &amp; Decrement , Conditional, Bit wises, Special Expressions &amp; its Evaluation</p> <p>Control statements in Java</p> <p>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 of Assessment	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 of Assessment	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 of Assessment	External: Laboratory observation and viva voce.				
RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT-3	Sheet No. 2/5
Branch	Information Technology / Computer Science & Engineering		Semester	V	
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 of Assessment	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 of Assessment	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 of Assessment	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	Information Technology / Computer Science & Engineering	Semester	V
Course Code		Course Name	Java Programming
Course Outcome - 3	Apply Multithreading and Exception handling features in Java	Teach Hrs	Mark s
Learning Outcome 1	Illustrate multithreading concepts in java programs	8	10
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	10
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	Information Technology / Computer Science & Engineering	Semester	V
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	Information Technology / Computer Science & Engineering	Semester	V	
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	<a href="https://www.javatpoint.com/java-tutorial">https://www.javatpoint.com/java-tutorial</a>	
6	<a href="https://docs.oracle.com/javase/tutorial/">https://docs.oracle.com/javase/tutorial/</a>	
7	<a href="https://www.javatpoint.com/java-networking">https://www.javatpoint.com/java-networking</a>	
8	<a href="https://www.geeksforgeeks.org/java-networking/">https://www.geeksforgeeks.org/java-networking/</a>	
9	E-books/E-tools/Relevant software to be used as recommended by AICTE/NITTTR/RGPV	

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. 4
					C/I	0	4				1	1	
<b>COURSE NAME</b>	<b>JAVA PROGRAMMING</b>												
<b>CO Description</b>	<b>Apply basic programming constructs of Java language</b>												
<b>LO Description</b>	<b>Explain fundamentals and application Programming environment of Java</b>												
<b>SCHEME OF STUDY</b>													
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	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)	Interactive classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	6	NIL	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal						
1	Mid semester theory examination	Pen-Paper test/ Quiz/ MCQ	10	Test paper + Rating scale			Internal						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
Part of progressive I													



<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					<i>C/I</i>	<i>0</i>	<i>4</i>				<i>1</i>	<i>2</i>	
<b>COURSE NAME</b>	<b>JAVA PROGRAMMING</b>												
<b>CO Description</b>	<b>Apply basic programming constructs of Java language</b>												
<b>LO Description</b>	<b>Illustrate the building blocks of Java programming</b>												
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>				<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>	<b>Remarks</b>			
1	<b>Introduction to objects and classes</b> - 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. <b>Operators:</b> Arithmetic, Relational, Logical Assignments, Increment & Decrement , Conditional, Bit wise, Special Expressions &its Evaluation <b>Control statements in Java</b> Decision making Control Statement : if statement , Simple if statement , if...else statement , Nesting of if-else statement switch statement Iteration Control Statement: for loop , while loop, do-while loop, break, continue.				Interactive classroom teaching, demonstration, quiz, assignments , tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	10	NIL	Handouts, chalk board, PPT, text book, charts, video film.				
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>			<b>Maximum Marks</b>	<b>Resources Required</b>				<b>External / Internal</b>			
1	End semester theory examination	Pen- Paper Test			10	Question paper + rating scale				External			
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
NIL													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>		<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
				<i>C/I</i>	<i>0</i>	<i>4</i>				<i>1</i>	<i>3</i>	
<b>COURSE NAME</b>	<b>JAVA PROGRAMMING</b>											
<b>CO Description</b>	<b>Apply basic programming constructs of Java language</b>											
<b>LO Description</b>	<b>Develop simple Java programs in Java programming environment</b>											
<b>SCHEME OF STUDY</b>												
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>	<b>Remarks</b>					
1	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.	Interactive Lab classroom teaching, quiz, assignments, tutorial	Teacher will explain the contents in Lab Class and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	10	NIL	Handouts, chalk board, PPT, text book, charts, video film.						
<b>SCHEME OF ASSESSMENT</b>												
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>		<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>				
1	Laboratory observation/ Assignment/ viva	Students will be asked to install JDK on the system and start writing simple java programs and executing them on console. Afterwards students will install IDE like eclipse and execute java programs through it.		10	Observation schedule/check-list /rating scales /rubrics			Internal				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>												
NIL												

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. 4
					C/I	0	4				1	4	
<b>COURSE NAME</b>	<b>JAVA PROGRAMMING</b>												
<b>CO Description</b>	<b>Apply basic programming constructs of Java language</b>												
<b>LO Description</b>	<b>Develop programs using basic programming constructs in Java.</b>												
<b>SCHEME OF STUDY</b>													
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	<ul style="list-style-type: none"> <li>) programming using branching statements-if, if-else, if-elif, nested if-else statements, ternary operators, switch statement</li> <li>) Programs using looping constructs- for, while, do-while constructs, break and continue statements.</li> </ul>	Interactive lab classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents in lab/class and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	NIL	12	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal								
1	Laboratory observation and viva voce	Students will be asked to write java code for given problem, compile and execute the code, debug if bugs are found and create lab file attaching the code and output.	10	Observation schedule/check-list /rating scales /rubrics	External								
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
NIL													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					<i>C/I</i>	<i>0</i>	<i>4</i>				<i>2</i>	<i>1</i>	
<b>COURSE NAME</b>		<b>JAVA PROGRAMMING</b>											
<b>CO Description</b>		<b>Apply the concept of Object Oriented Programming in Java.</b>											
<b>LO Description</b>		<b>Illustrate the concept of Data hiding and Inheritance in Java.</b>											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>	<b>Remarks</b>						
1	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.	Interactive classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	06	NIL	Handouts, chalk board, PPT, text book, charts, video film, lab manual.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>						
1	End semester theory examination	Pen- Paper Test/MCQ	10	Question paper + rating scale			External						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
NIL													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					C/I	0	4				2	2	
<b>COURSE NAME</b>		<b>JAVA PROGRAMMING</b>											
<b>CO Description</b>		<b>Apply the concept of Object Oriented Programming in Java.</b>											
<b>LO Description</b>		<b>Explain Multiple inheritance and polymorphism</b>											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>						<b>Remarks</b>	
1	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	Interactive classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	6	NIL	Handouts, chalk board, PPT, text book, charts, video film, lab manual.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>						
1	End semester theory examination	Pen- Paper Test/MCQ	10	Question paper + rating scale			External						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
NIL													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					C/I	0	4				2	3	
<b>COURSE NAME</b>		<b>JAVA PROGRAMMING</b>											
<b>CO Description</b>		<b>Apply the concept of Object Oriented Programming in Java.</b>											
<b>LO Description</b>		<b>Demonstrate Arrays, String, Wrapper classes, inbuilt and user defined Packages</b>											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>	<b>Remarks</b>						
1	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	Interactive classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	8	NIL	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>						
1	Mid semester theory examination	Pen-Paper test/ Quiz/ MCQ	10	Test paper + Rating scale			Internal						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
Part of Progressive II													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					<i>C/I</i>	<i>0</i>	<i>4</i>				<i>2</i>	<i>4</i>	
<b>COURSE NAME</b>		<b>JAVA PROGRAMMING</b>											
<b>CO Description</b>		<b>Apply the concept of Object Oriented Programming in Java.</b>											
<b>LO Description</b>		<b>Experimenting with object oriented features of Java, Arrays, String and Wrapper classes.</b>											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>						<b>Remarks</b>	
1	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	Interactive lab classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents in lab/class and provide handouts to students. Teacher will conduct assignments/quiz/tutorial to make students practice their knowledge.	NIL	14	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>						
1	Laboratory observation and viva voce	Practical	10	Observation schedule/check-list /rating scales /rubrics			External						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
NIL													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					C/I	0	4				3	1	
<b>COURSE NAME</b>	<b>JAVA PROGRAMMING</b>												
<b>CO Description</b>	<b>Apply Multithreading and Exception handling features in Java</b>												
<b>LO Description</b>	<b>Illustrate multithreading concepts in java programs</b>												
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>						<b>Remarks</b>	
1	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.	Interactive classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	8	NIL	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>						
1	End semester theory examination	Pen- Paper Test/MCQ	10	Question paper + rating scale			External						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
NIL													



<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. <b>4</b>
					<i>C/I</i>	<i>0</i>	<i>4</i>				<b>3</b>	<b>2</b>	
<b>COURSE NAME</b>		<b>JAVA PROGRAMMING</b>											
<b>CO Description</b>		<b>Apply Multithreading and Exception handling features in Java.</b>											
<b>LO Description</b>		<b>Interpret inbuilt and user defined exception handling.</b>											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>	<b>Remarks</b>						
1	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.	Interactive classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	8	NIL	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>						
1	End semester theory examination	Pen- Paper Test/MCQ	10	Question paper + rating scale			External						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
NIL													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>		<b>Branch Code</b>		<b>Course Code</b>		<b>CO Code</b>	<b>LO Code</b>	Format No. 4
				<i>C/I</i>	<i>0</i>	<i>4</i>		<i>3</i>	<i>3</i>	
<b>COURSE NAME</b>	<b>JAVA PROGRAMMING</b>									
<b>CO Description</b>	<b>Apply Multithreading and Exception handling features in Java</b>									
<b>LO Description</b>	<b>Experimenting with multithreading and exception handling in Java.</b>									
<b>SCHEME OF STUDY</b>										
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>	
1	Program using the multithreading feature of java, setting priority of a thread, Program demonstrating synchronization among various threads and inter thread communication.	Interactive lab classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents in lab/class and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	NIL	12	Handouts, chalk board, PPT, text book, charts, video film.				
<b>SCHEME OF ASSESSMENT</b>										
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>			
1	Laboratory observation/ Assignment / viva	Lab Work	10	Observation schedule/check-list /rating scales /rubrics			Internal			
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>										
NIL										

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					C/I	0	4				4	1	
<b>COURSE NAME</b>	<b>JAVA PROGRAMMING</b>												
<b>CO Description</b>	<b>Apply Java I/O concepts for a given problem.</b>												
<b>LO Description</b>	<b>Explain Concept of Stream classes and File handling in Java</b>												
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>						<b>Remarks</b>	
1	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	Interactive classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	12	NIL	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>						
1	End semester theory examination	Pen- Paper Test/MCQ	10	Question paper + rating scale			External						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
NIL													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>		<b>Branch Code</b>		<b>Course Code</b>		<b>CO Code</b>	<b>LO Code</b>	Format No. 4
				<i>C/I</i>	<i>0</i>	<i>4</i>			4	
<b>COURSE NAME</b>	<b>JAVA PROGRAMMING</b>									
<b>CO Description</b>	<b>Apply Java I/O concepts for a given problem</b>									
<b>LO Description</b>	<b>Demonstrate input output using stream classes and File handling in Java</b>									
<b>SCHEME OF STUDY</b>										
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>	<b>Remarks</b>			
1	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.	Interactive lab classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents in lab/class and provide handouts to students. Teacher will conduct assignments/quiz/tutorial to make students practice their knowledge.	NIL	12	Handouts, chalk board, PPT, text book, charts, video film.				
<b>SCHEME OF ASSESSMENT</b>										
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>		<b>External / Internal</b>				
1	Laboratory observation and viva voce	Practical	10	Observation schedule/check-list /rating scales /rubrics		External				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>										
NIL										

RGPV (Diploma Wing ) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code			Course Code			CO Code	LO Code	Format No. 4
		C/I	0	4				5	1	

<b>COURSE NAME</b>	<b>JAVA PROGRAMMING</b>
<b>CO Description</b>	<b>Interpret Java networking Concepts</b>
<b>LO Description</b>	<b>Explain the concepts of Socket Programming in Java</b>

**SCHEME OF STUDY**

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	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.	Interactive classroom teaching, demonstration, quiz, assignments, Tutorial.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	6	NIL	Handouts, chalk board, PPT, text book, charts, video film.	

**SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	End semester theory examination	Pen- Paper Test/MCQ	10	Question paper + rating scale	External

**ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)**

NIL

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					C/I	0	4				5	2	
<b>COURSE NAME</b>		<b>JAVA PROGRAMMING</b>											
<b>CO Description</b>		<b>Interpret Java networking Concepts</b>											
<b>LO Description</b>		<b>Illustrate URL processing in Java</b>											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>				
1	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.	Interactive classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	5	0	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>		<b>Maximum Marks</b>	<b>Resources Required</b>				<b>External / Internal</b>				
1	Pen Paper / Short answer / Quiz/MCQ	Short Answer Type Test/Quiz/Pen Paper Work		10	Test paper + Rating scale				Internal				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
NIL													