GOVERNMENT POLYTECHNIC, NAGPUR.

(An Autonomous Institute of Govt. of Maharashtra)

COURSE CURRICULUM

PROGRAMME	**:**	**DIPLOMA IN IT/CM**
LEVEL NAME	**:**	**ELECTIVE COURSES**
COURSE CODE	**:**	**IT501E$**
COURSE TITLE	**:**	**ADVANCE JAVA**
PREREQUISITE	**:**	**IT402E**
TEACHING SCHEME	**:**	**TH: 03; TU:00; PR:04 (CLOCK HRs.)**
TOTAL CREDITS	**:**	**05(1 TH/TU CREDIT = 1 CLOCK HR., 1 PR CREDIT = 2 CLOCK HR.)**
TH. TEE	**:**	**03 HRs**
PR. TEE	**:**	**02 HRs (External)**
PT.	**:**	**01 HR**

❖ RATIONALE:

This course provides the knowledge necessary to understand java and develop dynamic web pages using java server page (JSP). It covers the basic underlying concepts and techniques recently used in the IT industry. After going through this course student will be able to do Web Development and Desktop Application Development.

❖ COURSE OUTCOMES:

After completing this course students will be able to–

1. Comprehend Java SDK environment to create, debug and run advanced Java programs.
2. Comprehend building blocks of Object Oriented Programming language.
3. Summarize different Object Oriented features of Advanced Java.
4. Develop program in java using Networking, Sockets, Beans and Remote Method Invocation.
5. Develop, debug and execute java programs on Java Database Connectivity.
6. Design GUIs using Swing and implement Server side programming using Servlet and Java Server Pages

❖ **COURSE DETAILS:**

A. THEORY :

Units	Specific Learning Outcomes (Cognitive Domain)	Topics and subtopics	Hrs.
1. Networking And Socket Programming	1. Compare TCP with UDP 2. Describe the client server communication. 3. Describe Socket and server socket, URL format, proxy servers, Factory methods, instance method 4. Apply Socket Programming 5. Develop Client server communication programs	1.1 TCP\IP addressing, TCP\IP internals 1.2 Network programming basics-TCP client, TCP server, client server communication 1.3 Socket and server socket, URL format, proxy servers 1.4 The networking classes & interfaces 1.5 Factory methods, instance method, Data gram packets 1.6 Creating servers/clients sockets-Sending Data from client to server or vice-versa, 1.7 Creating proxy server, Datagram server & client.	08
2. Java Database Connectivity	1. Describe the Database client/server methodology 2. List and Describe Database Design 3. Describe the limitations Using JDBC 4. List And Describe the types of JDBC Drivers 5. Describe the Security Considerations of JDBC 6. Apply java database connectivity through all types of drivers 7. Develop program using JDBC to query database and modify it	2.1 Java as a Database front end ,Database client/server methodology 2.2 Two-Tier Database Design, Three-Tier Database Design 2.3 The JDBC API- The API Components, Limitations Using JDBC(Applications vs. Applets) 2.4 Security Considerations, JDBC Database Example 2.5 JDBC Drivers, JDBC-ODBC Bridge, Current JDBC Drivers, Alternate connectivity strategies 2.6 database Connectivity using JDBC API, sending queries through JDBC bridge & handling result 2.7 Connectivity to object databases, Connectivity with Web based Database systems	08
3. Remote Method Invocation And Java Beans	1. Describe RMI 2. Describe the RMI Architecture 3. Develop program using RMI 4. Describe Java Beans 5. List advantages of java beans	3.1 REMOTE METHOD INVOCATION: Serialization, Deserialization, object persistence and RMI, RMI architecture, RMI example, The common object request broker	09

	6. Describe CORBA and its Architecture. 7. Describe JAR, persistence, customizers. 8. Develop program of simple Bean using BDK	architectures(CORBA) 3.2 JAVA BEANS : Introduction to Java Beans, Advantages of Java Beans, Application Builder Tools, The Bean Developer kit(BDK), JAR Files, Introspection, Developing a simple Bean, Using Bound properties Using the Win interface Constrained properties, Persistence, Customizers The Java Beans API Developing simple bean using BDK(Bean Developing Kit)	
4. Swings	1. Describe Swing 2. List advantages of Swing 3. Describe various components of Swing 4. Develop programs in java using various swing components	4.1 Introduction to swing, 4.2 Japplet, Icons and Labels 4.3 TextFields, Buttons 4.4 Combo Boxes 4.5 Tabbed Panes 4.6 Scroll Panes 4.7 Trees 4.8 Tables 4.9 Exploring the Swings 4.10 Creating Buttons, Labels , Check box, table	06
5. Servlets	1. Describe Servlet and its application 2. Describe Servlet life cycle 3. State types of Servlet 4. Develop programs using javax.servlet package 5. Develop programs on servlet for reading parameters 6. Describe session tracking, security issues. 7. Develop programs to handle HTTP Requests and responses	5.1 The Life Cycle Of a Servlet, The Java Servlet 5.2 Development Kit, The Simple Servlet, The Servlet API 5.3 The Javax Servlet Package 5.4 Reading Servlet Parameters 5.5 Reading Initialization Parameters 5.6 The javax.servlet.http package 5.7 Handling HTTP Requests and responses, Using Cookies 5.8 Session Tracking, Security Issues, Exploring Servlet 5.9 Create simple servlet, Reading servlet parameters 5.10 Handling client requests through servlet	09
6. Java Server Pages	1. Describe the architecture of JSP, JSP Life cycle 2. List and Describe components of JSP, JSP Tags 3. Develop programs using Java Server Pages 4. Apply Session Tracking 5. Develop program for Form	6.1 Introduction to Java Server Pages 6.2 JSP Syntax and Semantics: The JSP Development Model, Components of JSP page, Simple example of JSP 6.3 Expressions, Scriplets and Declarations 6.4 JSP Tags 6.5 Sessions Tracking	08

	Editing, Database Connectivity	6.6 Form Editing, Log-in pages 6.7 JSP Applications: Database Access With JDBC, Overview of JDBC,JDBC Drivers, Connecting to a Database With Driver manager	
		Total Hrs.	**48**

B. LIST OF PRACTICALS/LABORATORY EXPERIENCES/ASSIGNMENTS:

Practicals	**Specific Learning Outcomes (Psychomotor Domain)**	**Units**	**Hrs.**
1.	Create, debug and execute programs based on Socket and server socket.	Networking And Socket Programming	1
2.	Create, debug and execute programs based on TCP client server communication.		1
3.	Create, debug and execute programs based on servers/clients sockets and Sending Data from client to server.		2
4.	Create, debug and execute programs based on connectivity to MS ACESS using JDBC	Java Database Connectivity	2
5.	Create, debug and execute programs based on connectivity to oracle using JDBC.		2
6.	Create, debug and execute programs based on RMI (client server communication)	Remote Method Invocation And Java Beans	2
7.	Create, debug and execute programs based on developing a simple Bean.		2
8.	Create, debug and execute programs based on Developing simple bean using BDK(Bean Developing Kit).		2
9.	Create, debug and execute programs based on Buttons, Labels.	Swings	1
10.	Create, debug and execute programs based on Check box, table.		1
11.	Create, debug and execute programs based on applet using Icons and Labels, Text Fields Buttons, Combo Boxes.		2
12.	Create, debug and execute programs based on Generic Servlet.	Servlets	2
13.	Create, debug and execute programs based on HTTP Servlet.		2
14.	Create, debug and execute programs based on Java Server Pages (JSP).	Java Server Pages	2
15.	Create, debug and execute programs based on Java Server Pages (JSP).		2
16.	Mini Project		4
		Skill Assessment	**2**
		Total Hrs	**32**

❖ SPECIFICATION TABLE FOR THEORY PAPER:

Unit No.	Units	Levels from Cognition Process Dimension			Total Marks
		R	U	A	
01	Networking And Socket Programming	02(02)	04(04)	04(00)	10(06)
02	Java Database Connectivity	04(02)	04(04)	06(00)	14(06)
03	Remote Method Invocation And Java Beans	04(00)	08(06)	00(00)	12(06)
04	Swings	00(04)	04(00)	06(04)	10(08)
05	Servlets	02(00)	04(04)	06(04)	12(08)
06	Java Server Pages	02(00)	04(00)	06(06)	12(06)
	Total	**14(08)**	**28(18)**	**28 (14)**	**70 (40)**

R – Remember U – Understand A – Analyze / Apply

QUESTION PAPER PROFILE FOR THEORY PAPER

Q. No	Bit 1			Bit 2			Bit 3			Bit 4			Bit 5			Bit 6			option
	T	L	M	T	L	M	T	L	M	T	L	M	T	L	M	T	L	M	
01	1	R	2	3	R	2	3	R	2	5	R	2	6	R	2	1	R	2	5/7
	2	R	2																
02	2	R	4	1	U	4	5	U	4	4	A	4	2	U	4				3/5
03	2	U	4	3	U	4	6	U	4	4	R	4	5	A	4				3/5
04	3	U	4	4	U	4	1	A	4	1	U	4	5	U	4				3/5
05	4	A	6	6	A	6	3	U	6										2/3
06	2	A	6	5	A	6	6	A	6										2/3

T= Unit/Topic Number L= Level of Question M= Marks

R-Remember U-Understand A-Analyze/ Apply

❖ ASSESSMENT AND EVALUATION SCHEME:

	What		To Whom	Frequency	Max Marks	Min Marks	Evidence Collected	Course Outcomes
Direct Assessment Theory	**CA** (Continuous Assessment)	Progressive Test (PT)	Students	Two PT (average of two tests will be computed)	20	--	Test Answer Sheets	1, 2, 3
		Assignments		Continuous	10	--	Assignment Book / Sheet	1, 2, 3
	TEE (Term End Examination)	End Exam	Students	End Of the Course	**70**	**28**	Theory Answer Sheets	1, 2, 3
				Total	**100**	**40**		
Direct Assessment Practical	**CA** (Continuous Assessment)	Skill Assessment	Students	Continuous	20	--	Rubrics & Assessment Sheets	4,5,6
		Journal Writing		Continuous	05	--	Journal	4,5,6
				TOTAL	**25**	**10**		
	TEE (Term End Examination)	End Exam	Students	End Of the Course	**50**	**20**	Rubrics & Practical Answer Sheets	4,5,6
Indirect Assessment	Student Feedback on course		Students	After First Progressive Test	Student Feedback Form			1, 2, 3, 4,5,6
	End Of Course			End Of The Course	Questionnaires			

❖ SCHEME OF PRACTICAL EVALUATION:

S.N.	Description	Max. Marks
1	Writing program, Logic of the program	10
2	Debug the program	10
3	Execution of program, Program Output, Complexity of program	20
4	Viva voce	10
	TOTAL	**50**

❖ MAPPING COURSE OUTCOMES WITH PROGRAM OUTCOMES:

1. Information Technology:

Course Outcomes	Program Outcomes (POs)										PSOs	
(COs)	1	2	3	4	5	6	7	8	9	10	1	2
1	-	3	-	-	-	-	-	-	-	-	-	3
2	-	3	-	-	-	-	-	-	-	-	-	3
3	-	3	-	-	-	-	-	-	-	-	-	3
4	-	3	2	2	-	-	-	2	2	2	-	3
5	-	3	2	2	-	-	-	2	2	2	-	3
6	-	3	2	2	-	-	-	2	2	2	-	3

2. Computer Engineering:

Course Outcomes	Program Outcomes (POs)										PSOs	
(COs)	1	2	3	4	5	6	7	8	9	10	1	2
1	-	3	-	-	-	-	-	-	-	-	3	3
2	-	3	-	-	-	-	-	-	-	-	3	3
3	-	3	-	-	-	-	-	-	-	-	3	3
4	-	3	2	2	-	-	-	2	2	2	3	3
5	-	3	2	2	-	-	-	2	2	2	3	3
6	-	3	2	2	-	-	-	2	2	2	3	3

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

❖ REFERENCE & TEXT BOOKS:

S.N.	Title	Author, Publisher, Edition and Year Of publication	ISBN Number
1.	Java 2: The Complete reference	Patrick Naughton, McGraw Hill Edu., Fifth Edition, reprint 2015	13:9780072119763
2.	Programming with Java: A Primer	Balagurusamy –TATA McGraw Hill Edu First Reprint 2010	13:9780070141698
3.	JDBC, Servlets and JSP Black Book	Santosh Kumar K. , Kogent Solutions Inc., dreamtech, New ed Paperback – 13 May 2008	13:9788177228373
4.	Advanced Java Programming	Uttam K. Roy, Oxford higher education, illustrated, 2015	13:9780199455508

❖ E-REFERENCES:

- Java Development Kit:
  http://www.oracle.com/technetwork/java/javase/downloads/index.html , assessed on 16th September 2016
- http://docs.oracle.com/javase/specs/jls/se8/html/index.html, assessed on 16th September 2016
- http://docs.oracle.com/javase/tutorial/java/index.html , assessed on 16th September 2016
- http://www.tutorialspoint.com/java/ , assessed on 16th September 2016
- http://www.tutorialspoint.com/javaexamples, assessed on 16th September 2016
- http://www.learnjavaonline.org/ , assessed on 16th September 2016
- http://www.c4learn.com/javaprogramming/ , assessed on 16th September 2016
- https://www.webucator.com/tutorial/learn-java/index.cfm , assessed on 16th September 2016

❖ LIST OF MAJOR EQUIPMENTS/INSTRUMENTS WITH SPECIFICATION

1. Computer System with latest configuration
2. Java Development Kit 1.8 and above
3. Editors : Notepad, Textpad, NetBeans, eclipse (Freeware)

❖ LIST OF EXPERTS & TEACHERS WHO CONTRIBUTED FOR THIS CURRICULUM:

S.N.	Name	Designation	Institute / Industry
1.	Dr. A. R. Mahajan	Head of Information Technology	Government Polytechnic, Nagpur.
2.	Mr. S. P. Lambhade	Head of Computer Engineering	Government Polytechnic, Nagpur.
3.	Mr. R. L. Meshram	Lecturer in Information Technology	Government Polytechnic, Nagpur.
4.	Mr. L. D. Vilhekar	Lecturer in Information Technology	Government Polytechnic, Nagpur.

5.	Mrs. G. B. Chavan	Lecturer in Computer Engineering	Government Polytechnic, Nagpur.
7	Mr. Atul Upadhyay	CEO	Vista Computers , Ram Nagar, Nagpur
8	Mr. N. V. Chaudhari	Asst. Professor (CSE)	DBACEO, Wanadongri, Nagpur
9	Mr. Manoj Jethawa	HOD Computer Science	Shri Datta Meghe Polytechnic, Nagpur

(Member Secretary PBOS) **(Chairman PBOS)**