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

PREREOUISITE : 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.
- 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 Programmin g	 Compare TCP with UDP Describe the client server communication. Describe Socket and server socket, URL format, proxy servers, Factory methods, instance method Apply Socket Programming Develop Client server communication programs 	 TCP\IP addressing, TCP\IP internals Network programming basics-TCP client, TCP server, client server communication Socket and server socket, URL format, proxy servers The networking classes & interfaces Factory methods, instance method, Data gram packets Creating servers/clients sockets-Sending Data from client to server or vice-versa, 	08
	55	1.7 Creating proxy server, Datagram server & client.	
2. Java Database Connectivity	 Describe the Database client/server methodology List and Describe Database Design Describe the limitations Using JDBC List And Describe the types of JDBC Drivers Describe the Security Considerations of JDBC Apply java database connectivity through all types of drivers 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	 Describe RMI Describe the RMI Architecture Develop program using RMI Describe Java Beans 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	architectures(CORBA)	
	Architecture.	3.2 JAVA BEANS :	
	7. Describe JAR, persistence,	Introduction to Java Beans,	
	customizers.	Advantages of Java Beans,	
	8. Develop program of	Application Builder Tools,	
	simple Bean using BDK	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	4.1 Introduction to swing,	06
1. Dwings	2. List advantages of Swing	4.2 Japplet, Icons and Labels	50
	3. Describe various	4.3 TextFields, Buttons	
	components of Swing	4.4 Combo Boxes	
	4. Develop programs in java	4.5 Tabbed Panes	
	using various swing	4.6 Scroll Panes	
	components	4.7 Trees	
	3/ 61	4.8 Tables	
	84/	4.9 Exploring the Swings	
	4/	4.10 Creating Buttons, Labels , Check	
	J - (G)	box, table	
5. Servlets	1. Describe Servlet and its	5.1 The Life Cycle Of a Servlet, The	09
	application	Java Servlet	0,7
	2. Describe Servlet life cycle	5.2 Development Kit, The Simple	
	3. State types of Servlet	Servlet, The Servlet API	
	4. Develop programs using	5.3 The Javax Servlet Package	
	javax.servlet package	5.4 Reading Servlet Parameters	
	5. Develop programs on	5.5 Reading Initialization Parameters	
	servlet for reading	5.6 The javax.servlet.http package	
	parameters	5.7 Handling HTTP Requests and	
	6. Describe session tracking,	responses, Using Cookies	
	security issues.	5.8 Session Tracking, Security Issues,	
	7. Develop programs to	Exploring Servlet	
	handle HTTP Requests	5.9 Create simple servlet, Reading	
	and responses	servlet parameters	
	and responses	5.10 Handling client requests through servlet	
6 Jave	1. Describe the architecture	6.1 Introduction to Java Server Pages	08
6. Java	of JSP, JSP Life cycle	6.2 JSP Syntax and Semantics: The	00
Server	2. List and Describe	JSP Development Model,	
Pages	components of JSP, JSP	Components of JSP page, Simple	
	Tags	example of JSP	
	3. Develop programs using	6.3 Expressions, Scriplets and	
	Java Server Pages	Declarations	
	4. Apply Session Tracking	6.4 JSP Tags	
	5. Develop program for Form	6.5 Sessions Tracking	
	3. Develop program for Form	0.5 Sessions Hacking	

Editing, Database	6.6	Form Editing, Log-in pages	
Connectivity	Connectivity 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:

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

SPECIFICATION TABLE FOR THEORY PAPER:

Unit	Units	Levels from C	ognition Proces	s Dimension	Total Marks
No.		R	U	A	
01	Networking And Socket Programming	02(02)	04(04)	04(00)	10(06)
02	Java Database Connectivity	04(02)	04(<mark>04</mark>)	06(00)	14(<mark>06</mark>)
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

							18755		7.44		All the same	76. 76							
Q.	Bit 1			Bit 2		Bit 3		Bit 4		Bit 5		Bit 6			ontion				
No	T	L	M	Т	L	M	T	L	M	T	L	M	T	L	M	T	L	M	option
01	1	R	2	3	R	2	3	R	2	5	R	2	6	R	2	1	R	2	5/ <mark>7</mark>
01	2	R	2									10	1						3/1
02	2	R	4	1	U	4	5	U	4	4	Α	4	2	U	4				3/5
03	2	U	4	3	U	4	6	U	4	4	R	4	5	Α	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	Α	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:

	V	Vhat	To Whom	Frequency	Max Marks	Min Marks	Evidence Collected	Course Outcomes
ory	CA (Continuous Assessment)	Progressive Test (PT)	Students	Two PT (average of two tests will be computed)	20		Test Answer Sheets	1, 2, 3
Direct Assessment Theory	C (Conti	Assignments	Stud	Continuous	10		Assignment Book / Sheet	1, 2, 3
Direct Asse	TEE (Term End Examination)	End Exam	Students	End Of the Course	70	28	Theory Answer Sheets	1, 2, 3
				Total	100	40		
	essment)	Skill Assessment		Continuous	20		Rubrics & Assessment Sheets	4,5,6
Direct Assessment Practical	CA ttinuous Ass	Assessment Assessment Journal Writing Students	Students	Continuous	05		Journal	4,5,6
sessme	(Cor			TOTAL	25	10		
Direct As	TEE (Term End Examination)	End Exam	Students	End Of the Course	50	20	Rubrics & Practical Answer Sheets	4,5,6
ssessment	Student Feedback on course End Of Course		Studente	After First Progressive Test	Stud	lent Feedba	ack Form	1 2 2 456
Indirect A			Students	End Of The Course	Questionnaires			1, 2, 3, 4,5,6

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	-	-	0.507.6		-	-	-	-	-	3
2	-	3	-	لند		X	L	-	-		-	3
3	-	3	-	3/	6	C.	1		-	-	-	3
4	-	3	2	2		DAT.	-)	2	2	2	-	3
5	-	3	2	2	3	TV	=/	2	2	2	-	3
6	-	3	2	2	-Zh		10	2	2	2	-	3

2. Computer Engineering:

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	Patrick Naughton, McGraw Hill Edu.,	13:9780072119763
1.	reference	Fifth Edition, reprint 2015	
2.	Programming with Java: A	Balagurusamy –TATA McGraw Hill	13:9780070141698
۷.	Primer	Edu First Reprint 2010	
	JDBC, Servlets and JSP Black	Santosh Kumar K., Kogent Solutions	13:9788177228373
3.	Book	Inc., dreamtech, New ed Paperback –	
		13 May 2008	
4.	Advanced Java Programming	Uttam K. Roy, Oxford higher	13:9780199455508
+.	Advanced Java Flogramming	education, illustrated, 2015	13.7700177433300

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	Government Polytechnic,
		Technology	Nagpur.
2.	Mr. S. P. Lambhade	Head of Computer	Government Polytechnic,
		Engineering	Nagpur.
3.	Mr. R. L. Meshram	Lecturer in Information	Government Polytechnic,
		Technology	Nagpur.
4.	Mr. L. D. Vilhekar	Lecturer in Information	Government Polytechnic,
		Technology	Nagpur.

5.	Mrs. G. B. Chavan	Lecturer in Computer	Government Polytechnic,
		Engineering	Nagpur.
7	Mr. Atul Upadhyay	CEO	Vista Computers, Ram Nagar,
	1000 100 1		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)

