Course Code	PCS21C02J	Course Name	ADVANCED JAVA PROGRAMMING	Course Category	C	Professional Core Course	L	T	P	C
							3	0	4	5

Pre-requisite Courses	Java Programming	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Computer Science	Data Book / Codes/Standards	Nil		

Course Learning Rationale (CLR):	The purpose of learning this course is to:	Learning			Program Learning Outcomes (PLO)														
		1	2	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)	Fundamental Knowledge	Application of Concepts	Link with Related Disciplines	Procedural Knowledge	Skills in Specialization	Ability to Utilize Knowledge	Skills in Modeling	Analyze, Interpret Data	Investigative Skills	Problem Solving Skills	Communication Skills	Analytical Skills	PSO 1	PSO 2	PSO 3
CLR-1 :	*This course is designed to teach the student how to write, test, and debug advanced-level Object-Oriented programs using Java with a heavy emphasis towards database and web application development*																		
CLR-2 :	*Learn how to write, test, and debug distributed applications using Java*																		
CLR-3 :	*To work with Web and Application Servers like Apache Tomcat, Glassfish etc and understand the communication over HTTP protocol.*																		
CLR-4 :	*Develop web application using Java Servlet and Server Pages technology*																		
CLR-5 :	*Develop Enterprise applications using EJB*																		
CLR-6 :	*Learn the foundations of the MVC architecture*																		
Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:																		
CLO-1 :	*Write distributed and Network applications using Java*	3	80	70	L	H	-	H	L	-	-	-					-	-	-
CLO-2 :	*To write java applications that communicate with diverse databases*	3	85	75	M	H	L	M	L	-	-	-					-	-	-
CLO-3 :	*Create Web applications using Servlets*	3	75	70	M	H	M	H	L	-	-	-					-	-	-
CLO-4 :	*Understand and implement session handling in web pages*	3	85	80	M	H	M	H	L	-	-	-					-	-	-
CLO-5 :	*Role of EJB in Server-side programming*	3	85	75	H	H	M	H	L	-	-	-					-	-	-
CLO-6 :	*Develop a fully functional web applications with the MVC design pattern*	3	80	70	L	H	M	H	L	-	-	-					-	-	-

Duration (hour)		21	21	21	21	21
S-1	SLO-1	*Applications in distributed environment Overview of RMI*	*Database access and servlet programming*	*Introduction to JSP*	*EJB Overview*	*Understanding the need for MVC*
	SLO-2	*Introduction to RMI*	*Introduction to JDBC connection*	*JSP Working Principle & Architecture*	*EJB Architecture: Logical*	*MVC overview*
S-2	SLO-1	*Developing an RMI Application*	*JDBC Drivers- Driver types*	*Life Cycle of JSP*	*EJB Architecture: Software Architecture*	*Frameworks*
	SLO-2	*Activation models*	*Connecting to a Database*	*Components of a JSP page: Scripting Component*	*View of EJB Conversation*	*Architecture*
S-3	SLO-1	*Architecture of an RMI Application*	*Statement Interfaces*	*JSP Directives*	*Building and Deploying EJB's*	*Implementing MVC with request dispatcher*
	SLO-2	*RMI custom sockets*	*PreparedS tatement and Callable Statement*	*JSP Action Elements*	*EJB Stateless Bean constraints on session beans Life Cycle with example*	*Implementing MVC with request dispatcher*
S 4-7	SLO-1	*Laboratory 1: Create distributed applications using RMI*	*Laboratory4: Create applications which can demonstrate the use of JDBC for Database Connectivity. Insert, update, delete record*	*Laboratory 7: Web Applications using JSP Include Directive JSP: include Action*	*Laboratory 10: An EJB application that demonstrates Session Bean- Stateless Bean*	*Laboratory 13: MVC Architecture(i) Implementing MVC with Request Dispatcher(ii) Data Sharing Approaches*
	SLO-2					
S-8	SLO-1	*Object Serialization*	*Working with ResultSet*	*JSP Implicit Objects*	*EJB Stateful Bean*	*Defining Beans to represent the data*

Duration (hour)		21	21	21	21	21
	SLO-2	Serialization Object Serializable Interface Example of object Serialization	JDBC using Using MetaData	JSP Request Processing	EJB Entity Beans: When to use Entity Bean	writing servlets to handle requests
S-9	SLO-1	RMI – IIOP	Background – Servlet	Request Dispatcher Object	Entity Bean Life Cycle	populating Beans methods
	SLO-2	IIOP with example	Types: Generic Servlet, GenericServlet class	JSP Server Response	Primary keys, And its implementation	storing the results
S10	SLO-1	Relationship between RMI – IIOP	HttpServlet HttpServlet class	Model1 Vs Model2 JSP Model1 and Model2 Architectures	Uses and Methods of Bean-Managed Versus Container Managed Persistence	forwarding the requests
	SLO-2	Introduction to COBRA	Servlet Life Cycle Life Cycle of a Servlet	Request Redirection is JSP	Example: Container Managed Persistence	Categories of beans storing and retrieving
S 11-14	SLO-1 / SLO-2	Laboratory 2: converting an RMI application to RMI-IIOP.	Laboratory 5: Develop Web Applications Using Servlet Develop Web Applications Using ServletRequest, ServletResponse	Laboratory8: Create a JSP based Web application which allows the user to edit his/her database Information.	Laboratory11: Develop a web program to execute EJB: Entity Beans	Laboratory 14: Build a web application defining Beans to represent the data
S-15	SLO-1	Development of CORBA applications	Servlet Request	JSP and Java Bean:	Bean Managed persistence- methods and classes	summarizing the MVC code
	SLO-2	CORBA programming models	ServletResponse	Java Bean Types and methods		interpreting relative URL
S-16	SLO-1	CORBA structures	Servlet Context	JSP and XML	Message Driven Beans: implementation	three data sharing approaches
	SLO-2	Java IDL, IDL Technology	ServletConfig	XML Overview	Message Driven Beans: Life Cycle.	Request based sharing
S-17	SLO-1	Naming services And its categories	Methods of Servlet Interface, Single Thread Model, Thread Model	Methods of XML Parsers	EJB – Database Access	Session based sharing
	SLO-2	JAR file creation.	Session Tracking: Cookies URL Rewriting, Hidden Fields, The Session API Session API	XSL Transformations with XSLT	EJB : Exception Handling	Application based sharing
S 18-21	SLO-1 / SLO-2	Laboratory 3: Create application using COBRA, Create a sample JAR file	Laboratory 6: Program that demonstrates the use of session management in Servlet.	Laboratory 9: Develop a web application for XML Perform XSL Transformations with XSLT	Laboratory12: Program on Managed persistence- Message Driven Beans:	Laboratory 15: Implement the various data sharing approaches .

Learning Resources	1. Elliotte Rusty Harold, (2013), "Java Network Programming", O'Reilly Publishers. (For Unit I to III)	2. Antonio Goncalves, (2010), "Beginning Java EE 6 Platform with GlassFish 3", Apress, Second Edition. (For Units IV to V)

Learning Assessment

Bloom's Level of Thinking		Continous Learning Assessment(50% Weightage)								Final Examination (50% weightage)	
		CLA – 1 (10%)		CLA – 2 (10%)		CLA – 3 (20%)		CLA – 4# (10%)			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember / Understand	20%	20%	15%	15%	15%	15%	15%	15%	15%	15%
Level 2	Apply / Analyze	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Level 3	Evaluate / Create	10%	10%	15%	15%	15%	15%	15%	15%	15%	15%
	Total	100 %		100 %		100 %		100 %		100%	

CLA – 4 can be from any combination of these: Assignments, Seminars, Scientific Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications etc.,

Course Designers		
Experts from Industry	**Experts from Higher Technical Institutions**	**Internal Experts**
Mr. S. Karthik, Assistant Consultant, Tata Consultancy Services	Dr. S. Sasikala, Associate Professor and Head, Dept. of Computer Science, University of Madras	Dr. Sweety Bakyarani. E Mrs. P. Yogalakshmi