SEMESTER – II

Course Code	PIT21C201J	Course Name	ADVANCED JAVA PROGRAMMING	Course Category	C	Professional Core Courses	L	T	P	C
							3	0	4	5

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

Course Learning Rationale (CLR):	The purpose of learning this course is to:	Learning
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 toward network and web programming.	1
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:	Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)
CLO-1 :	Write distributed and Network applications using Java	3	80	70
CLO-2 :	To write java applications that communicate with diverse databases	3	85	75
CLO-3 :	Create Web applications using Servlets	3	75	70
CLO-4 :	Understand and implement session handling in web pages	3	85	80
CLO-5 :	Role of EJB in Server side programming	3	85	75
CLO-6 :	Develop a fully functional web applications with the MVC design pattern	3	80	70

Program Learning Outcomes (PLO)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	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	ICT Skills	Professional Behavior	Life Long Learning
CLO-1 :	L	H	-	H	L	-	-	-	L	L	-	H	-	-	-
CLO-2 :	M	H	L	M	L	-	-	-	M	L	-	H	-	-	-
CLO-3 :	M	H	M	H	L	-	-	-	M	L	-	H	-	-	-
CLO-4 :	M	H	M	H	L	-	-	-	M	L	-	H	-	-	-
CLO-5 :	H	H	M	H	L	-	-	-	M	L	-	H	-	-	-
CLO-6 :	L	H	M	H	L	-	-	-	L	L	-	H	-	-	-

Duration (hour)		21	21	21	21	21
S-1	SLO-1	Remote method invocation : Overview of RMI	Servlet – Introduction	JSP Overview	EJB Architecture: Logical Architecture	Understanding the need for MVC
	SLO-2	Introduction to RMI	Background – Servlet	Why to Learn JSP	EJB overview	MVC overview
S-2	SLO-1	Developing an RMI Application	Types : Generic Servlet,	How JSP works	Software Architecture	Frameworks
	SLO-2	Setting up RMI	GenericServlet class	JSP Working Principle	EJB Architecture	Architecture
S-3	SLO-1	Architecture of an RMI Application RMI Architecture	HttpServlet HttpServlet class	Components of a JSP page JSP Architecture	EJB Session Beans EJB Stateless Bean	implementing MVC with request dispatcher Struts2 configuration
	SLO-2	RMI over IIOP.Database Access RMI Database	Servlet Life Cycle Life Cycle of a Servlet	JSP life Cycle Life Cycle of JSP	constraints on session beans EJB Stateful Bean	Struts2 Actions Create Actions
S 4-7	SLO-1 SLO-2	Laboratory 1: Create distributed applications using RMI	Laboratory4: Develop Web Applications Using Servlet	Laboratory 7: Web Applications using JSP	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
S-8	SLO-1	Overview of JDBC	Servlet Classes: Servlet	JSP API	Life Cycle with example	Struts2 Interceptors
	SLO-2	Presentation to JDBC connection	Servlet Classes	API	Life Cycle of EJB	Struts2 framework Interceptors
S-9	SLO-1	JDBC Drivers JDBC Driver types	ServletRequest	JSP : Scripting Elements JSP Syntax	EJB Entity Bean Entity Bean in EJB	Struts2 Result type Results and Result type
	SLO-2	Connecting to a Database Database connections	ServletResponse	JSP Implicit objects Pre- defined variables	When to use Entity Bean Use of Entity Bean	Struts2 File upload Create View files
S10	SLO-1	Statement Interfaces	ServletContext,	RequestDispatching: Anatomy of Request Processing	Entity Bean Life Cycle	Create Action Class

	SLO-2	JDBC statements, prepareStatement and CallableStatement	ServletContext Methods	JSP - Directives	Life Cycle of Entity Bean	Configuration File
S 11-14	SLO-1	Laboratory 2: Create applications which can demonstrate the use of JDBC for Database Connectivity.	Laboratory 5: Develop Web Applications Using ServletRequest, ServletResponse	Laboratory8: Include Directive JSP: include Action	Laboratory11: An EJB application that demonstrates Session Bean –Stateful Bean	Laboratory 14: Build a web application that collects the user's name and displays "Hello World" followed by the user name.
	SLO-2					
S-15	SLO-1	Using MetaData.	ServletConfig	Forwarding Requests	Message Driven Beans:	Struts2 Database Access
	SLO-2	Statement Objects	Methods of Servlet Interface	JSP Client Request	Create Message driven Beans	JPA/Hibernate integration
S-16	SLO-1	ResultSets	Single Thread Model	RequestDispatcher Object	EJB Annotations	Create Action using JSP file
	SLO-2	Result and ResultSets	Thread Model	JSP Server Response	Describe Meta data using Annotations	Action using JSP
S-17	SLO-1	Commit and Rollback Transaction Control	Session Tracking: Cookies Cookies	Model1 Vs Model2 JSP Model1 and Model2 Architectures	EJB – Access Database Database Using JDBC API	Create Main page using JSP file Main page creation
	SLO-2	JDBC - Exceptions Exception Handling	URL Rewriting, Hidden Fields, The Session API Session API	JSP Actions. Actions in JSP	EJB : exception Handling Exception Handling in EJB	Create View Create Configuration File
S18-21	SLO-1	Laboratory 3: Create student applications using JDBC Database Connectivity	Laboratory 6: Program that demonstrates the use of session management in Servlet.	Laboratory 9: Create a JSP based Web application which allows the user to edit his/her database Information.	Laboratory12: An EJB application that demonstrates Entity Bean.	Laboratory 15: creating our view which will be required to browse and upload a selected file.
	SLO-2					

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	20%	20%	15%	15%	15%	15%	15%	15%	15%	15%
	Understand										
Level 2	Apply	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Analyze										
Level 3	Evaluate	10%	10%	15%	15%	15%	15%	15%	15%	15%	15%
	Create										
	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
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