SEMESTER – IV

Course Code	UCS20401J	Course Name		ADVANCED JAVA PROGRAMMING	Course Category	C	Professional Core	L	T	P	C
								4	0	4	6

Pre-requisite Courses	Nil	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		
		1	2	3
CLR-1 :	*This module aims to introduce the students to some concepts of advanced programming and practice on reusing components.*			
CLR-2 :	*The course covers Graphical User Interface (GUI) networking, and database manipulation*			
CLR-3 :	*To work with* Web and Application Servers *like Apache Tomcat, Glassfish etc and understand the communication over HTTP protocol.*			
CLR-4 :	*Enterprise application using JavaBeans l*			
CLR-5 :	*Develop web application using Java Servlet and Server Pages technology*			
CLR-6 :				

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 :	*Advanced technology in Java such as Internationalization, and Remote method Invocation*	3	80	70
CLO-2 :	*To write sophisticated Java applications*	3	85	75
CLO-3 :	*To use Java language for writing well-organized, complex computer programs with both command-line and GUI*	3	75	70
CLO-4 :	*Develop a JSP code to create a Web site*	3	85	80
CLO-5 :	*Construct Web Application using Servlets*	3	85	75
CLO-6 :	*Web application using Java Server Pages*	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)		24	24	24	24	24
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	HttpServlet	Components of a JSP page	EJB Session Beans	implementing MVC with request dispatcher
	SLO-2	RMI Architecture	HttpServlet class	JSP Architecture	EJB Stateless Bean	Struts2 configuration
S-4	SLO-1	RMI over IIOP.Database Access	Servlet Life Cycle	JSP life Cycle	constraints on session beans	Struts2 Actions
	SLO-2	RMI Database	Life Cycle of a Servlet	Life Cycle of JSP	EJB Stateful Bean	Create Actions
S 5-8	SLO-1	LAB 1: Create distributed applications using RMI	Develop Web Applications Using Servlet	Web Applications using JSP	An EJB application that demonstrates Session Bean-Stateless Bean	MVC Architecture(i) Implementing MVC with Request Dispatcher(ii) Data Sharing Approaches
	SLO-2					
S-9	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-10	SLO-1	JDBC Drivers	ServletRequest	JSP : Scripting Elements	EJB Entity Bean	Struts2 Result type
	SLO-2	JDBC Driver types		JSP Syntax	Entity Bean in EJB	Results and Result type
S-11	SLO-1	Connecting to a Database	ServletResponse	JSP Implicit objects	When to use Entity Bean	Struts2 File upload
	SLO-2	Database connections		Pre- defined variables	Use of Entity Bean	Create View files
S-12	SLO-1	Statement Interfaces	ServletContext,	RequestDispatching: Anatomy of Request Processing	Entity Bean Life Cycle	Create Action Class
	SLO-2	JDBC statements, prepareStatement and CallableStatement		JSP - Directives	Life Cycle of Entity Bean	Configuration File
S 13-16	SLO-1	LAB 2: Create applications which can demonstrate the use of JDBC for Database Connectivity.	Develop Web Applications Using ServletRequest, ServletResponse	Include Directive JSP: include Action	An EJB application that demonstrates Session Bean – Stateful Bean	Build a web application that collects the user's name and displays "Hello World" followed by the user name.
	SLO-2					
S-17	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-18	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-19	SLO-1	Commit and Rollback	Session Tracking: Cookies	Model1 Vs Model2	EJB – Access Database	Create Main page using JSP file
	SLO-2	Transaction Control	Cookies	JSP Model1 and Model2 Architectures	Database Using JDBC API	Main page creation
S-20	SLO-1	JDBC - Exceptions	URL Rewriting, Hidden Fields, The Session API	JSP Actions.	EJB : exception Handling	Create View
	SLO-2	Exception Handling	Session API	Actions in JSP	Exception Handling in EJB	Create Configuration File
S 21-24	SLO-1	LAB 3: Create student applications using JDBC Database Connectivity	Program that demonstrates the use of session management in Servlet.	Create a JSP based Web application which allows the user to edit his/her database Information.	An EJB application that demonstrates Entity Bean.	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) 2.2. 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, Tech Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications, Conf. Paper etc.,

Course Designers		
Experts from Industry	**Experts from Higher Technical Institutions**	**Internal Experts**
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Course Code	**USA20401J**	**Course Name**	**DATABASE SYSTEMS**	**Course Category**	**C**	**Professional Core**	**L**	**T**	**P**	**C**
							4	**0**	**4**	**6**

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

		Learning			Program Learning Outcomes (PLO)														
Course Learning Rationale (CLR):	The purpose of learning this course is to:	1	2	3	1	2	3	4	5	6	7	8	9	100	11	12	13	14	15
CLR-1 :	Understand the fundamentals of Database Management Systems, Architecture and Languages	Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)	Engineering Knowledge	Problem Analysis	Design & Development	Analysis, Design, Research	Modern Tool Usage	Society & Culture	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO - 1	PSO - 2	PSO – 3
CLR-2 :	Conceive the database design process through ER Model and Relational Model																		
CLR-3 :	Design Logical Database Schema and mapping it to implementation level schema through Database Language Features																		
CLR-4 :	Familiarize queries using Structure Query Language (SQL) and PL/SQL																		
CLR-5 :	Familiarize the Improvement of the database design using normalization criteria and optimize queries																		
CLR-6 :	Understand the practical problems of concurrency control and gain knowledge about failures and recovery																		
Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:																		
CLO-1 :	Acquire the knowledge on DBMS Architecture and Languages	3	80	70	H	M	L	L	-	-	-	-	L	L	L	H	-	-	-
CLO-2 :	Apply the fundamentals of data models to model an application's data requirements using conceptual modeling tools like ER diagrams	3	85	75	H	H	H	H	H	-	-	-	H	H	H	H	-	-	-
CLO-3 :	Apply the method to convert the ER model to a database schemas based on the conceptual	3	75	70	H	H	H	H	H	-	-	-	H	H	H	H	-	-	-