

Course Code	Course Title	L	T	P	C
BCSE405L	Advanced Java Programming	3	0	0	3
Pre-requisite	NIL	Syllabus version			
		1.0			
Course Objectives					
<ol style="list-style-type: none"> To demonstrate the use of Object Oriented Programming and threads concepts in Java. To familiarize students with Graphical user interface, networking, distributed application, web development using servlet and JSP. To impart the core features of spring and hibernate framework. 					
Course Outcomes					
After successfully completing the course the student should be able to					
<ol style="list-style-type: none"> Choose the appropriate OOP technique for solving the given problem and use multithreads when required. Design Graphical User Interface using JavaFX. Build applications using java networking concepts and Deploy distributed applications using RMI. Design, Develop and Deploy dynamic web applications using Servlets with JDBC. Design and Develop applications using JSP and Enterprise Java Bean. Recognize the capabilities of java framework to facilitate solving industrial applications using Spring and Hibernate framework. 					
Module:1	Java Fundamentals and Multithreading	7 hours			
Java Fundamentals- Class, Packages and Interface. Multi threading: thread life-cycle, thread creation, thread priorities, thread scheduler, thread pool, thread group, synchronization and Inter thread communication.					
Module:2	Java FX	6 hours			
JavaFX architecture, life cycle, collections, event, utilities, scene control, FXML and Webview.					
Module:3	Java Networking and RMI	6 hours			
Java Networking – TCP - UDP - InetAddress and Ports - Socket Programming. Java Remote Method Invocation – Invocation concept – Remote Interface – Passing Objects – Client Side and Server side RMI Process.					
Module:4	Servlets with Database Connectivity	5 hours			
Java Servlets – MVC Architecture – Container Architecture – Controller Components – Dynamic Forms – Servlet Context - The JDBC API: The API components, database operations like creating tables, CRUD(Create, Read, Update, Delete) operations using SQL – JDBC Drivers.					
Module:5	Java Server Pages and Enterprise Java Beans	7 hours			
JSP Scripting Elements – Tags - Variables and Objects – Methods – Control Statements – User Sessions – Cookies – Session Objects – JSTL and Servlets with JSP. Enterprise JavaBeans: Deployment Descriptors – Session JavaBean – Entity JavaBean – Message and Driven Bean.					
Module:6	Spring Framework	6 hours			
Introduction to Spring – Bean scope and lifecycle –Bean Definition Inheritance - Dependency injection – Spring MVC: Building spring web Apps – Creating controllers and views. Introduction to docker, deploying spring boot with docker.					

Module:7	Hibernate Framework	6 hours	
Introduction to Hibernate – Architecture, Lifecycle, Configuration, Session and Persistent class, Hibernate Query Languages and Criteria queries. Spring Hibernate Integrations.			
Module:8	Recent Trends	2 hours	
Guest lectures from Industry and, Research and Development Organizations			
Total Lecture hours:			45 hours
Text Book(s)			
1.	Herbert Schildt, "Java: The Complete Reference", 11 th Edition, McGraw-Hill Publishers, 2019.		
2.	Santosh Kumar K "JDBC 4.2, Servlet 3.1, and JSP 2.3 Includes JSF 2.2 and Design Patterns, Black Book", 2 nd Edition, DT Editorial Services, 2016.		
Reference Books			
1.	Santosh Kumar K "Spring and Hibernate", Mc.Graw Hill Education, 2017.		
2	Dreamtech Press "Core and Advanced Java, Black Book", DT Editorial Services, 2018.		
Mode of Evaluation: CAT / written assignment / Quiz / FAT			
Recommended by Board of Studies		12-05-2023	
Approved by Academic Council		No. 70	Date 24-06-2023