



**Kadi Sarva Vishwavidyalaya**  
**Faculty of Engineering & Technology**  
**Third Year Bachelor of Engineering (CE/IT)**  
(In Effect From Academic Year 2019-20)

<b>Subject Code:</b> CT506A-N	<b>Subject Title:</b> Advanced Java Programming
<b>Pre-requisite</b>	Object Oriented Programming with Java

### Teaching Scheme (Credits and Hours)

Teaching scheme				Total Credit	Evaluation Scheme					
L	T	P	Total		Theory		Mid Sem Exam	CIA	Pract.	Total
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	Marks
03	00	02	05	04	03	70	30	20	30	150

This course introduces the students to the advanced topics of Java Programming technology, which helps students to prepare themselves for the industry standards and develop various business enterprise applications as well as client-server and web applications.

### Course Objective:

This course aims to

- Teach the Students for developing interactive user-friendly interfaces using the Java Swing class and appropriate layout managers.
- Teach the database connectivity with Java programming
- Explain the enterprise architectures.
- Simulate the networking in java.
- Educate the students for developing web-based applications using Advanced Java Technologies.

### Outline of the Course:

Sr. No	Title of the Unit	Minimum Hours
1	Swing	6
2	JDBC	6
3	Java Networking and J2EE	7
4	Servlets, Event Listeners and Filters	8
5	Java Server Pages and JSTL	7
6	Hibernet 4.0	7
7	Spring MVC	7

**Total hours (Theory): 48**

**Total hours (Lab): 32**

**Total hours: 80**



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### Detailed Syllabus

No	Topic	Lecture (Hrs)	Weightage (%)
1	Swing : JFC, MVC Architecture; difference between AWT and Swing, Components from javax.swing package – JComponent, JFrame, JWindow, JLabel, JButton, JTextComponent, JToggleButton, JRadioButton, JCheckBox ; Pluggable Look and Feel	6	12
2	JDBC: Components of JDBC; JDBC Architecture; JDBC Drivers, CURD operation Using JDBC and java.sql package, DriverManager Class, Driver, Connection, Statement and Resultset Interfaces, difference between java.sql and javax.sql	6	12
3	Java Networking and J2EE : Network Programming in Java using the java.net package; Establishing two-way communication between Server and Client using TCP and UDP; Features of Java Enterprise Edition; Architecture of Java EE; Working with EJB	7	15
4	Servlets : Exploring javax. servlet and javax.servlet.http packages; Servlet Life cycle; Creating a servlet; ServletConfig and Servlet Context objects; HttpServletRequest and HttpServletResponse Interfaces; Session Tracking Mechanisms; Event Handling; Creating and Configuring filters; Parameter initialization in Filters; Manipulating Responses using Filter.	8	16
5	Java Server Pages: Introduction to JSP Technology; Architecture of JSP (Model – I and Model - II); Life Cycle of JSP Page; Working with basic JSP Basic Tags; Action Tags and Implicit objects in JSP; JSP Unified EL; Elements of Tag extensions; Tag Extension API in Java; Life Cycle of Simple Tag Handler; Introduction to JSTL; Core Tag Library and XML Tag Library	7	15
6	Hibernate : Architecture of Hibernate; HQL; Setting up the development environment; Creating Database Table; Writing Hibernate Configuration file; JavaBean and Hibernate mapping file; Implementing O/R mapping with Hibernate	7	15
8	Spring MVC : Spring Framework Architecture; Dependency Injection and Inversion of Control; AOP with Spring; Managing Transactions in Spring; Spring Form Tag Library; Spring's Web MVC Framework	7	15
	<b>Total</b>	<b>48</b>	<b>100</b>

### Instructional Method and Pedagogy:

- At the start of course, significance of the course, content delivery pattern, and other required details regarding subject will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lecture and laboratory which will be reflected in Continuous Internal Assessment (CIA) component in the examination scheme of the course.
- Assignments based on the course content will be given to the students and will be evaluated at regular interval evaluation.



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- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures. Experiments shall be performed in the laboratory related to course contents.

### Learning Outcome:

On successful completion of this course, the student should be able to:

- Implement the solution of a real time problem definition using Java Technology.
- Make them prepared with the current industry standards.

### e-Resources:

- [https://onlinecourses.nptel.ac.in/noc19\\_cs07/](https://onlinecourses.nptel.ac.in/noc19_cs07/)
- <https://www.tutorialspoint.com/spring/>
- <https://www.tutorialspoint.com/hibernate/>
- <https://www.javatpoint.com/java-tutorial/>
- <https://www.edureka.co/blog/advanced-java-tutorial/>

### Reference Books:

1. Java Server Programming Java EE 7 (J2EE 1.7) Black book, Kogent Learning Solutions Inc., DreamTech Publication.
2. Java: The Complete Reference, 10th Edition, by Herbert Schildt, McGraw-Hill.
3. Advance Java Technology, by M.T. Savaliya, Kogent Learning Solutions Inc., DreamTech Publication.
4. Advanced Java Programming, by Uttam Kumar Roy, Oxford University Press.

### List of experiments:

No	Name of Experiment
1	Create a simple calculator application using Swing in Java
2	Implement Student information system using JDBC
3	a. Create chat application using TCP protocol. b. Create chat application using UDP protocol.
4	Develop an EJB application to store and retrieve the student record.
5	a) Write a Servlet to display "Welcome to LDRP" on browser. b) Write a Servlet that will fetch the header information and parameter values from the header and print it on the webpage c) Create a Servlet that implements ServletContextAttributeListener interface such that a message dialog is displayed whenever an attribute is added or removed or replaced.
6	Write a servlet that counts the number of times that web page is visited and displays the same information on that page.
7	Assume that the information regarding the salary and age for all employees of an organization are available in a database. Develop a Servlet application which takes the employee id of an employee as a request parameter and displays the marksheet for the student.



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8	Write a Servlet for an online shopping website, where the customer registers himself with his name and email- id. The continue button will be available on that page and each subsequent page, which displays the list of items. The customer will choose the items and the required quantity. In last webpage the customer's name, email id, the list of his purchased items and the bill amount is shown. The students are advised to make the use of cookies.
9	Create a servlet filter that adds the request processing time in the response page.
10	Create a Login application using servlet and JSP, where the user will provide his login details in a servlet page and if the login is successful then, a JSP page with "Welcome" message and "Log Out" button should be shown. If the login is failed, then message of failure and link to further login should be shown on a JSP page. If the failure count reaches to 3 then the webpage should be closed. The students are advised to make use of session tracing mechanisms.
11	a) Create a web page that prints 1 to 10 using JSTL 8.2 b) Create a custom JSP tag that prints current date and time. Use this tag into JSP page.
12	Create a hibernate application for employee payroll system.
13	Create a "Hello World" application using Spring MVC framework.
14	Create an online appointment booking application using Spring Web MVC framework