

## Syllabus

B. Sc. (Computer Science)	Semester - IV
Course Name : Advanced Java	Course Code : USCS402
TOPICS (Credits : 02, Lectures/Week : 03)	

### Objectives

Explore advanced topic of Java programming for solving problems.

### Expected Learning Outcomes :

- 1) Understand the concepts related to Java Technology.
- 2) Explore and understand use of Java Server Programming.

Unit	Details	Lectures
I	<p><b>Swing</b> : Need for swing components, Difference between AWT and swing, Components hierarchy, Panes, Swing components : JLabel, JTextField and JPasswordField, JTextArea, JButton, JCheckBox, JRadioButton, JComboBox and JList.</p> <p><b>JDBC</b> : Introduction, JDBC Architecture, Types of Drivers, Statement, ResultSet, Read Only ResultSet, Updatable ResultSet, Forward Only ResultSet, Scrollable ResultSet, PreparedStatement, Connection Modes, SavePoint, Batch Updates, CallableStatement, BLOB &amp; CLOB. (Refer Chapters 1 and 2)</p>	15
II	<p><b>Servlets</b> : Introduction, Web application Architecture, Http Protocol &amp; Http Methods, Web Server &amp; Web Container, Servlet Interface, GenericServlet, HttpServlet, Servlet Life Cycle, ServletConfig, ServletContext, Servlet Communication, Session Tracking Mechanisms</p> <p><b>JSP</b> : Introduction, JSP LifeCycle, JSP Implicit Objects &amp; Scopes, JSP Directives, JSP Scripting Elements, JSP Actions : Standard actions and customized actions. (Refer Chapters 3 and 4)</p>	15
III	<p><b>Java Beans</b> : Introduction, JavaBeans Properties, Examples Struts 2: Basic MVC Architecture, Struts 2 framework features, Struts 2 MVC pattern, Request life cycle, Examples, Configuration Files, Actions, Interceptors, Results &amp; Result Types, Value Stack/OGNL</p> <p><b>JSON</b> : Overview, Syntax, DataTypes, Objects, Schema, Comparison with XML, JSON with Java. (Refer Chapters 5, 6 and 7)</p>	15

## Suggested List of Practicals

1. Develop the presentation layer of Library Management software application with suitable menus.
2. Design suitable database for Library Management System.
3. Develop business logic layer for Library Management System.
4. Develop Java application to store image in a database as well as retrieve image from database.
5. Write a Java application to demonstrate servlet life cycle.
6. Design database for student administration. Develop servlet(s) to perform CRUD operations.
7. Create Employees table in EMP database. Perform select, insert, update, and delete operations on Employee table using JSP.
8. Write a Student class with three properties. The useBean action declares a JavaBean for use in a JSP. Write Java application to access JavaBeans Properties.
9. Design application using Struts2. Application must accept user name and greet user when command button is pressed.
10. Write Java application to encoding and decoding JSON in Java.

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