COURSE TITLE	**ADVANCED JAVA**
COURSE CODE	**01CT1623**
COURSE CREDITS	**4**

Objective:

1 This course develops programming ability of students to create dynamic web applications using server-side technology with Java Database Connectivity. Students can learn networking and remote method invocation using Java API. Different Java frameworks like Spring, Java Server Faces and Hibernate will increase ability of students in web application development.

Course Outcomes: After completion of this course, student will be able to:

1 Describe the components of J2EE Architecture, MVC Framework and Multi-tier Application and Various Network Protocol.

2 To make use of Servlet and JSP API in the process of enterprise application deployment

3 Implement components such as Session, Filters, JSTL, Beans

4 Distinguish Application Server, Web Container, JDBC and ORM tools.

5 Design and Development of web application having collaboration of Servlets, JSPs, JSF, Spring and Hibernate base upon the requirement.

Pre-requisite of course: Object Oriented Programming with JAVA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**JDBC Programming** The JDBC Connectivity Model, Database Programming: Connecting to the Database, Creating a SQL Query, Getting the Results, Updating Database Data, Error Checking and the SQLException Class, The SQLWarning Class, The Statement Interface, PreparedStatement, CallableStatement The ResultSet Interface, Updatable Result Sets, JDBC Types, Executing SQL Queries, ResultSetMetaData, Executing SQL, Updates, Transaction Management	6

Contents : Unit	Topics	Contact Hours
2	**Servlet API and Overview Servlet Model** Overview of Servlet, Servlet Life Cycle, HTTP Methods Structure and Deployment descriptor ServletContext and ServletConfig interface, Attributes in Servelt, Request Dispacher interface The Filter API: Filter, FilterChain, Filter Config Cookies, Session Management: Understanding state and session, Understanding Session Timeout and Session Tracking, URL Rewriting	9
3	**Java Server Pages JSP Overview** The Problem with Servlets, Life Cycle of JSP Page, JSP Processing, JSP Application Design with MVC, Setting Up the JSP Environment. JSP Directives, JSP Action, JSP Implicit Objects JSP Form Processing, JSP Session and Cookies Handling, JSP Standard Tag Libraries, JSP Custom Tag, JSP Expression Language, JSP Exception Handling	9
4	**Hibernate 4.0** Overview of Hibernate, Hibernate Architecture, Hibernate Mapping Types, Hibernate O/R Mapping, Hibernate Annotation, Hibernate Query Language	9
5	**Spring** Introduction to spring, Dependency Injection, Spring AOP, Spring ORM, Spring MVC	9
Total Hours		**42**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Experiment-1** WAP that will retrieve data from Database and display on Console screen. (JDBC)	2
2	**Experiment-2** WAP that will take firstName, surName, email from user. Store that data into DB and display data from DB. (JDBC)	2
3	**Experiment-3** Search userDOB by passing arguments as date to servlet by submit the search.jsp page at SearchResult.java servlet that returns the rows of result back to clientResult.jsp page. (Servlet).	2
4	**Experiment-4** Create one class file named DBTransaction.java file under classes directory. That returns the connection obj. to servlet ConServlet.java file under same classes folder. Use this servlet for controller. Accept the data from CV.jsp page as forms data pass it to servlet that redirect data to the InsertData() method of DBTransaction.java file. Use ServletContext for controller (JDBC-Servlet).	2
5	**Experiment-5** Take USerName and Email-id from user in html page. Store email-id in xml file also. Display both values in servlet. (Servlet)	2

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
6	**Experiment-6** A servlet program to do session tracking and session counter using serssionListener.	2
7	**Experiment-7** JSP program to demonstrate arithmetic operations.	2
8	**Experiment-8** Gets two numbers in html page from the user and submit that numbers in jsp page,print appropriate output using methods. (JSP)	2
9	**Experiment-9** Get value from user and create cookie in another jsp page and also view that cookie. (JSP)	2
10	**Experiment-10** Get value from user and create session in another jsp page and also view. (JSP)	2
11	**Experiment-11** Session Demo program. Create login.jsp and check it from user_master db and set session for next UserAccount.jsp page. (JDBC-JSP)	2
12	**Experiment-12** Create employee_master table and check if user is authenticated or not by login module and set appropriate session. Every time whenver user loged in the last Access Time should be shown to user. give logout link and destory the session attributes and redirect the user to again login page. (JDBC-JSP)	2
13	**Experiment-13** JSP program to demonstrate jsp: forward action tag.	2
14	**Experiment-14** Create one user login registration page in jsp with all required form fields and insert into database. insertion of data done at servlet level where connection method is created in servlet. Accept the client httpServletRequest. (JDBC-Servlet-JSP)	2
Total Hours		**28**

Textbook :

1 Java The Complete Reference, Herbert Schildt., McGraw Hill Professional, 2018

2 Advanced Java Programming, Prasanalakshmi B, New Delhi : CBS, 2015

3 Intermediate & Advanced Java Programming, Stone River, elearning, 2017

References:

1 Head First Java , Head First Java , Kathy Sierra, O'Reilly Media, Inc., 2022

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
5.00	25.00	30.00	20.00	10.00	10.00

Instructional Method:

1 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

2 Practical examination will be conducted at the end of the semester for evaluation of performance of students in laboratory.

3 Students may use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory, etc.

4 The course delivery method will depend upon the requirement of content and need of the students. The teacher in addition to conventional teaching method (Chalk and Talk) may use any of the tools such as demonstration, role play, Quiz, brainstorming, Flipped class, Project based learning, Collaborative learning, MOOCs etc. for effective teaching.

Supplementary Resources:

1 www.nptel.com

2 www.javatpoint.com

3 https://www.codejava.net/struts-tutorials

4 https://www.tutorialspoint.com/java/index.htm

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