6.4.1 ADVANCED JAVA

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RATIONALE

The diploma holders in Computer Science and Engineering need to understand how server side programming can be done using Java/J2EE Technology They should be able to connect the middle layer to backend and frontend by server side programming Hence this subject is introduced in the curriculum.

LEARNING OUTCOMES

After undergoing the subject, the students will be able to:

- Understand Server Side Architecture of Web Applications
- Connect to Database and do the CRUD Database operations using JDBC
- Develop Web Application by using Servlets and JSP
- Manage Session in the web application
- . Understand Ajax Concept and uses

DETAILED CONTENTS

24. Introduction Server Side Platform (10 Periods)

Introduction to Web Applications, Dynamic websites, Three Layer Architecture of Web Application , Client Server Architecture , IP Address, Port, URL. Web Server, Introduction to Tomcat Web Server (Installation and its Services), Introduction toJ2EE

25. Database Programming using JDBC (14 Periods)

Introduction to JDBC, JDBC Drivers & Architecture, JDBC API
CURD operation Using JDBCAPI:
Database Connection, JDBC Statement, Prepared Statements (Advantages and Disadvantages), Using Result Sets

26. Java Servlets (17 Periods)

Servlet introduction, working of servlet, advantage of servlet, servlet terminology, Servlet Container, Life cycle of a servlet, introduction to servlet API, Servlet interface, Generics Servlet class, Http servlet class, RequestDispatcher (include() and forward).

27. Handling Sessions in Servlets (14 Periods)

Introductionto Session, Session Tracking mechanism:URL rewriting, Hidden form fields, Cookiesand Http Session (Working, Advantages and Disadvantages of all session tracking mechanism)

28. JSP (17 Periods)

Introduction to JSP - Architecture, JSP- Life cycle, JSP-syntax, JSP-Directive, JSP-Actions, JSP- Implicit objects, JSP - Client request, JSP - Server response, JSP integration with database, JSP Session

29. AJAX (12 Periods)

AJAX Introduction, XMLHttp, Request object, server response, AJAX events, Validation, Interaction with API

LIST OF PRACTICALS

1. Exercises related to make JDBC connections and CRUD operations on database by using JDBC APIs
2. Installation and configuration of Web Server Tomcat
3. Exercises related to Java Servlets
4. Exercises related to JSP
5. Exercises related to AJAX.
6. Exercises related to Session and Cookies.

INSTRUCTIONAL STRATEGY

Since this subject is practice oriented, the teacher should demonstrate the capabilities of server-side programming to students while doing practical exercises. The students should be made familiar with web server and dynamic web site development tools and techniques along with three tier architecture concept.

MEANS OF ASSESSMENT

- Assignments and quiz/class tests, mid-term and end-term written tests
- Actual laboratory and practical work, exercises and viva-voce
- Software installation, operation, development and viva-voce

RECOMMENDED BOOKS

8. Head First Servlets And JSP , Bert Bates , O' Reilly
9. Java Server Programming Java EE 7 (J2EE 1.7), Black Book , Kogent Learning Solutions Inc.
10. Jdbc, Servlets, And Jsp Black Book, Santosh Kumar KDT Editorial Services , Wiley
11. J2EE: The Complete Reference, Jim Keogh , McGraw Hill Education
12. e-books/e-tools/relevant software to be used as recommended by AICTE/UPBTE/NITTTR, Chandigarh.

Websites for Reference:

http://swayam.gov.in

http://spoken-tutorial.orgs

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1	10	10
2	14	16
3	16	22
4	14	16
5	16	22
6	14	14
Total	**84**	**100**