Marwadi University

Syllabus for Bachelor of Technology

Computer Engineering

Subject Code: 01CE0411
Subject Name: Advance Java Technology
B.Tech. Year – II

Objective: This course develops programming ability of students to create dynamic desktop and web applications using java technologies like JDBC, Swing, Servlets, and JSP. Different Java frameworks like Spring, and Hibernate will increase ability of students in web application development.

Credits Earned: 4 Credits

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

- To make use of Servlet and JSP API in the process of enterprise application deployment. (Apply)
- Implement components such as Session, Filters, JSTL. (Apply)
- Distinguish Application Server, Web Container, JDBC and ORM tools. (Analyse)
- Design and Development of desktop applications using Swing and JDBC. (Create)
- Design and Development of web application having collaboration of Servlets, JSP, Spring and Hibernate based upon the requirement. (Create)

Pre-requisite: Object oriented principles, Java programming language

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	Mid Sem (M)	Internal (I)	Viva (V)	Term work (TW)	
2	0	4	4	50	30	20	25	25	150

Contents:

Unit	Topics	Contact Hours
1	**Java Database Connectivity** JDBC Architecture, Types of JDBC Drivers, Introduction to major JDBC Classes and Interface, Creating simple JDBC Application, Types of Statement, Exploring ResultSet Operations, Batch Updates in JDBC, Creating CRUD Application, Using Rowsets Objects, Managing Database Transaction	8
2	**GUI – Swing & Event Handling**	8

	Swing features, Swing Containers: JFrame, JPanel, JWindow, Swing components : JLabel, ImageIcon, JTextField, JButton, JToggeleButton, JCheckBox, JRadioButton, JTabbedPane, JScrollPane, JList, JComboBox, JTree, JTable, Layout managers, Event model in Java, Event classes, Event listeners, Adapter classes	
3	**Servlets API** Servlet Introduction, Servlet Life Cycle(SLC), Types of Servlet, Servlet Configuration with Deployment Descriptor, Working with ServletContext and ServletConfig Object, Attributes in Servlet, Response and Redirection using Request Dispacher and using sendRedirect Method, Filter API, Manipulating Responses using Filter API, Session Tracking: using Cookies, HTTPSession, Hidden Form Fields and URL Rewriting, Types of Servlet Event: ContextLevel and SessionLevel	8
4	**Java Server Pages** Introduction to JSP, Comparison with Servlet, JSP Architecture, JSP: Life Cycle, Scripting Elements, Directives, Action Tags, Implicit Objects, Expression Language(EL), JSP Standard Tag Libraries(JSTL), Custom Tag, Session Management, Exception Handling, CRUD Application	8
5	**Hibernate framework** Introduction to Hibernate, Exploring Architecture of Hibernate, Object Relation Mapping(ORM) with Hibernate, Hibernate Annotation, Hibernate Query Language (HQL), CRUD Operation using Hibernate API	6
6	**Spring framework** Spring: Introduction, Architecture, Spring MVC Module, Life Cycle of Bean Factory, Explore: Constructor Injection, Dependency Injection, Inner Beans, Aliases in Bean, Bean Scopes, Spring Annotations, Spring AOP Module, Spring DAO, Database Transaction Management, CRUD Operation using DAO and Spring API	8
	Total Hours	46

References:

1. Black Book “Java server programming” J2EE, 1st ed., Dream Tech Publishers, 2008. 3. Kathy Walrath”
2. Complete Reference J2EE by James Keogh Mcgraw publication
3. Professional Java Server Programming by Subrahmanyam Allamaraju, Cedric Buest Wiley Publication
4. Core Java, Volume II: Advanced Features by Cay Horstmann and Gary Cornell Pearson Publication
5. Core Servlets and Java Server Pages Volume-II: Advanced Technologies by Marty Hall, Larry Brown and Yaakov Chaikin, Pearson Education
6. Java Persistence with Hibernate by Christian Bauer, Gavin King
7. Spring in Action 3rd edition , Craig walls, Manning Publication

8. Hibernate 2nd edition, Jeff Linwood and Dave Minter, Beginning Après publication
9. JDBC™ API Tutorial and Reference, Third Edition, Maydene Fisher, Jon Ellis, Jonathan Bruce, Addison Wesley
10. Beginning JSP, JSF and Tomcat, Giulio Zambon, Apress

Suggested Theory distribution:

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyse	Evaluate	Create
10%	20%	40%	10%	10%	10%

Laboratory work:

Laboratory work based on JDBC, Swing, Servlets, JSP, Hibernate and Spring with minimum 10 experiments will be incorporated which will be considered for evaluation.

Instructional Method:

a) The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.
b) The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
c) Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
d) Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

Supplementary Resources:

a) http://www.oracle.com/technetwork/java/javase/downloads/index.html
b) https://docs.oracle.com/javaee/6/tutorial/doc/
c) https://javaee.github.io/tutorial/
d) http://docs.oracle.com/javase/tutorial/java/index.html
e) https://spring.io/guides