



Course: BTech

Semester: 5

Prerequisite: Basic knowledge of software applications.

Rationale: This course provides a broad introduction to software engineering. The various process models required to develop software is also being described. Moreover the functional and non-functional requirements are also described.

Teaching and Examination Scheme

| Teaching Scheme | | | | | Examination Scheme | | | | | Total |
|------------------|-------------------|--------------|----------|--------|--------------------|----|---|----------------|---|-------|
| Lecture Hrs/Week | Tutorial Hrs/Week | Lab Hrs/Week | Hrs/Week | Credit | Internal Marks | | | External Marks | | |
| | | | | | T | CE | P | T | P | |
| 2 | 0 | 0 | 0 | 2 | 20 | 20 | - | 60 | - | 100 |

SEE - Semester End Examination, CIA - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content

W - Weightage (%) , T - Teaching hours

| Sr. | Topics | W | T |
|-----|--|----|---|
| 1 | Foundation of Enterprise Programming: JDBC, JDBC architecture, JDBC with Oracle, MySQL, Maven: integration with eclipse, POM.xml | 10 | 3 |
| 2 | Servlets: Basics of Web, Servlet Lifecycle, Servlets API, HTTP Servlets with XML and annotation, Servlets Configuration, Servlets Context, Servlets Collaboration, Session Tracking, CRUD operations | 15 | 4 |
| 3 | JSP: Java Server Programming: Scripting elements, Directive elements, CRUD operations. | 15 | 4 |
| 4 | Hibernate (ORM): Architecture, JPA, Generator class, Dialects, Mapping, Annotations, Transaction Management, HQL, HCQL, CRUD operations. | 20 | 6 |
| 5 | Spring: Architecture, Modules, Dependency Injection, Autowire, Application Context, annotation-based configuration, MVC CRUD operations | 20 | 7 |
| 6 | Spring Boot: Dependency Injection, Web App using spring boot, Spring boot AOP, spring boot Database, Spring Rest | 20 | 6 |

Reference Books

| | |
|----|--|
| 1. | Reference Books: Java Enterprise in a Nutshell" by Jim Farley, William Crawford, and David Flanagan (TextBook) |
| 2. | Java EE 8 Design Patterns and Best Practices" by Rhuan Rocha |
| 3. | Java EE and HTML5 Enterprise Application Development" by John Brock, Arun Gupta, and Geertjan Wielenga |
| 4. | Java 8 Programming Black Book |

Course Outcome**After Learning the Course the students shall be able to:**

1. Analyze the structure and operations of JDBC, and apply this knowledge to connect and interact with Oracle and MySQL databases.
2. Perform the concepts of Servlet Configuration and Context, and apply these in practical scenarios.
3. Apply their knowledge to perform CRUD operations using JSP and Hibernate and evaluate the results for correctness and efficiency.
4. Design and create a web application using Spring Boot.