20IT6303 WEB PROGRAMMING AND DEVELOPMENT

Course Category:	Program core		Credits:		3
Course Type:	Theory		Lecture-Tutorial-Practice:		2-0-2
Prerequisites:	20IT4302 Java Programming		Continuous Evaluation:		30
			Semester end Evaluation:		70
			Total Marks:		100
Course Outcomes	Upon successful completion of the course, the student will be able to:				
	CO1	Understand features of Spring Boot, Spring Framework and process involved to connect to Java Database Connectivity			
	CO2	Apply concepts of Servlets to develop server side applications			
	CO3	Design web applications connecting to JPA with Spring MVC and Spring Boot			
	CO4	Develop Spring Boot Applications using Spring Boot Annotations			

Contribution of Course Outcomes towards achievement of Program Outcomes (1-Low, 2-Medium, 3-High)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	CO1													1	1
	CO2	2				2								1	
	CO3			3		2								2	
	CO4			3		2								2	

Course Content	**UNIT I:** **JDBC**: The concept of JDBC, JDBC Driver Types, JDBC Packages, A Brief Overview Of The JDBC Process, Database Connection, Associating The JDBC/ODBC bridge with the Database, **Statement objects**-Statement, PreparedStatement and CallableStatement, ResultSet.
	UNIT II: **Java Servlets :** Java Servlets and common gateway interface programming, benefits of using a java servlets, simple java servlet, anatomy of a java servlet, deployment descriptor, reading data from a client, sending data to a client, working the cookies, tracking sessions.
	UNIT III: **Getting started with Spring Boot:** Structure, objectives, introduction, features, advantages of Spring Boot, Breaking the monolithic way of developing software, system requirements, setting up of the environment, the 12-factor app, Spring initializer **Developing Spring Boot Application**: Starting with Spring initializer, Build tools, building an application using Maven, understanding the entry point class and SpringBootApplication annotation.
	UNIT IV: **Spring Boot Annotations**: Java Annotations, existence of spring annotations, Spring and Spring Boot annotations, Stereotype annotations, Spring Boot Annotations **Working with Spring Data JPA**: Accessing relational data using JdbcTemplate

	and Spring data JPA in memory database, Spring data JPA with MySQL, Query methods in Spring data JPA
	Case Study: Deploy Web application into a server using Servelt/Spring framework
Text books and Reference books	**Text Book(s):** [1]. James Keogh, "J2Ee: The Complete Reference", 1st Edition, Mcgraw Hill Education, 2002 [2]. Shagun Bakliwal, Hands-on Application Development using Spring Boot, BPB Publications, First Edition, 2022 **Reference Book(s):** [1]. Craig Walls, Spring in Action, Sixth Edition, MEAP Edition, Manning Early Access Program, Version 4, 2021 [2]. Mark Heckler, Spring Boot: Up and Running, O'Reilly Media,2021
E-resources and other digital material	[1]. Ranga Karanam, Java Servlets and JSP - Build Java EE(JEE) app in 25 Steps, 04-06-2022 Available: https://www.udemy.com/course/learn-java-servlets-and-jsp-web-application-in-25-steps/ [2]. Spring-Official documentation, 04-06-2022 Available: https://spring.io/projects/spring-boot [3]. Advanced Java Programming by Infinite Skills, 04-06-2022 Available: https://www.udemy.com/advanced-java-programming/ [4]. Derek Parsons , Spring MVC, Spring Boot and Rest Controllers, Available: 04-06-2022, LearnQuest, https://www.coursera.org/learn/spring-mvc-rest-controller [5]. Ranga Karanam, Spring Framework Master Class - Java Spring the Modern Way, Available: 04-06-2022 https://www.udemy.com/course/spring-tutorial-for-beginners/

20IT6351-WEB PROGRAMMING AND DEVELOPMENT LAB

Course Category:	Program Core Lab		Credits:	2
Course Type:	Laboratory		Lecture-Tutorial-Practice:	0-0-2
Prerequisites:	20IT4302 Java Programming		Continuous Evaluation:	30
			Semester End Evaluation:	70
		Total Marks:		100

Course Outcomes	Upon successful completion of the course, the student will be able to:	
	CO1	Implement Java Database Connectivity Application Programming Interface to connect to relational databases
	CO2	Build server side applications to interact with server using Java Servlets
	CO3	Design Web applications that interact with server as well as the relational databases
	CO4	Implement dependency injection and inversion of control to solve problems in Spring Boot
	CO5	Apply Spring Boot annotations to provide solutions to real world problems
	CO6	Create Spring Boot applications that uses Spring Boot Annotations

Contribution of Course Outcomes towards achievement of Program Outcomes (1-Low, 2-Medium, 3-High)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	CO1		2			2									
	CO2	3				2									
	CO3			3		2								2	2
	CO4	2				3								1	
	CO5	3				2								2	2
	CO6			3		3								2	2

Course Content	**Week 1:** Create JDBC programs to access Databases
	
	    a. MS Access
	    b. MySQL

	Week 2: Connect to a database using different type of Statement Interfaces and process the results using ResultSet a. Implementation of CRUD operations on a relational database
	Week 3: Create server side applications using Java Servlets

	Week 4: Servlet programs on sessional tracking using
	
	    a. Cookies
	    b. Sessions

	Week 5: Creation of Spring programs via SpringBootApplication and Spring Initializer in Spring

	Week 6: Implementation of 12-factor App in Spring Boot
	Week 7: Implement dependency injection into a program in Spring Boot
	Week 8: Use of annotations in developing applications in Spring Boot
	Week 9 & 10: Accessing of relational databases via JDBC and JPA
	Week 11&12:Case Studies- 1. Develop web applications using Java Servlets 2. Web applications that handles the sessions via session tracking 3. Develop Spring Boot applications to real world problems
Text books and Reference books	**Text Book(s):** [1]. James Keogh, "J2Ee: The Complete Reference", 1st Edition, McGraw Hill Education, 2002 [2]. Shagun Bakliwal, Hands-on Application Development using Spring Boot, BPB Publications, First Edition, 2022 **Reference Book(s):** [1]. Craig Walls, Spring in Action, Sixth Edition, MEAP Edition, Manning Early Access Program, Version 4, 2021 [2]. Mark Heckler, Spring Boot: Up and Running, O'Reilly Media,2021
E-resources and other digital material	[1]. Ranga Karanam, Java Servlets and JSP - Build Java EE(JEE) app in 25 Steps, 04-06-2022 Available: https://www.udemy.com/course/learn-java-servlets-and-jsp-web-application-in-25-steps/ [2]. Spring-Official documentation, 04-06-2022 Available: https://spring.io/projects/spring-boot [3]. Advanced Java Programming by Infinite Skills, 04-06-2022 Available: https://www.udemy.com/advanced-java-programming/ [4]. Derek Parsons , Spring MVC, Spring Boot and Rest Controllers, Available: 04-06-2022, LearnQuest, https://www.coursera.org/learn/spring-mvc-rest-controller [5]. Ranga Karanam, Spring Framework Master Class - Java Spring the Modern Way, Available: 04-06-2022 https://www.udemy.com/course/spring-tutorial-for-beginners/