PRESIDENCY UNIVERSITY

(Established under the Presidency University Act, 2013 of the Karnataka Act 41 of 2013)

[2024-25 EVEN/ WINTER SEMESTER]

COURSE PLAN

SCHOOL: PSCS **DEPT: CSE** **DATE OF ISSUE: 10/01/25**

NAME OF THE PROGRAM	:	B.Tech Computer Science and Engineering
P.R.C. APPROVAL REF	:	PU/AC-24.7/SOCSE4/CSE/2022-2026
SEMESTER/YEAR	:	VI/ III
COURSE TITLE & CODE	:	JAVA FULL STACK DEVELOMENT &CSE3151
COURSE CREDIT STRUCTURE	:	2 -0-2 - 3
CONTACT HOURS	:	60 SESSIONS / 4 SESSIONS PER WEEK
COURSE ICs	:	
COURSE INSTRUCTOR(S)	:	Dr Joe Arun Raja, Sunil Kumar Sahoo, Dr. Afroz Pasha T RAMESH, Impa B H,Shankar J Dr. Nihar Ranjan Nayak Dr Jothish, SAKTHI PAVAN KUMAR S P, Sakthivel E DR. NAVEEN N. M.

PROGRAM OUTCOMES :

Name of PO	PO'S Description
PO1	**Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.**
PO2	**Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.**
PO3	**Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.**

PO4	**Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.**
PO5	**Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations**
PO6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.
PO8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.**
PO10	**Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.**
PO11	**Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.**
PO12	**Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.**

COURSE PREREQUISITES:

Problem solving using Java CSE1001
Advanced Java Programming CSE3146

COURSE DESCRIPTION:

This advanced level course enables students to perform full stack development using Java, with emphasis on employability skills. The key technologies used for Full Stack development is based on either Java technology or .NET technology. In this course, the focus is on using Java, and the related technologies/tools like Java EE, Java Persistence, Hibernate, Maven, Spring Core, etc. On successful completion of this course, the student shall be able to pursue a career in full-stack development. The students shall develop strong problem-solving skills as part of this course.

.COURSE OUTCOMES: On successful completion of the course the students shall be able to:

TABLE 1: COURSE OUTCOMES		
CO Number	CO	Expected BLOOMS LEVEL
1	Practice the use of Java for full stack development.	Apply
2	Demonstrate web applications using Java EE.	Apply
3	Solve simple applications using Java Persistence and Hibernate.	Apply
4	Apply concepts of Spring to develop a Full Stack application.	Apply
5	Demonstrate automation tools like Maven, Selenium for Full Stack development.	Apply

MAPPING OF C.O. WITH P.O. [H-HIGH, M- MODERATE, L-LOW]

TABLE 2a: CO PO Mapping ARTICULATION MATRIX												
CO. No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12
CO1	**M**	**H**	**H**	**M**	**H**				**M**	**L**	**M**	**M**
CO2	**M**	**H**	**H**	**M**	**H**				**M**	**L**	**M**	**M**
CO3	**M**	**H**	**H**	**M**	**H**				**M**	**L**	**M**	**M**
CO4	**M**	**H**	**H**	**M**	**H**				**M**	**L**	**M**	**M**
CO5	**M**	**H**	**H**	**M**	**H**				**M**	**L**	**M**	**M**

Name of PSO	PSO'S Description
PSO1	**Disciplinary knowledge:** Capable of demonstrating comprehensive knowledge and understanding of Computer Applications, Animation, Augmented and Virtual Reality, Gaming and Graphics.

PSO2	**Problem Solving:** Identify, formulate and apply appropriate techniques in the areas related to Software development, Augmented and Virtual Reality, Gaming and Graphics and related domains of varying complexities in real-time applications.
PSO3	**Design/development of Activities:** Conceive, Design and Develop various activities of Computer Applications, Augmented Reality, Virtual Reality, Gaming and Graphics.

TABLE 2b: CO PSO Mapping ARTICULATION MATRIX

CO. No	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**M**	**H**	**H**		
CO2	**M**	**H**	**H**		
CO3	**M**	**H**	**H**		
CO4	**M**	**H**	**H**		
CO5	**M**	**H**	**H**		

COURSE CONTENT (SYLLABUS):

Module:1: Introduction **[12 Sessions] [Apply]**

Review of Java; Advanced concepts of Java; Java generics; Java IO; New Features of Java. Unit Testing tools.

Module: 2: Java EE Web Applications **[12 Sessions] [Apply]**

Introduction to Eclipse & Tomcat; JSP Fundamentals; Reading HTML form Data with JSP; State Management with JSP; JSP Standard Tag Library - Core & Function Tags; Servlet API Fundamentals; ServletContext, Session, Cookies; Request Redirection Techniques; Building MVC App with Servlets & JSP; Complete App - Integrating JDBC with MVC App.

Module: 3: Java Persistence using JPA and Hibernate **[12 Sessions] [Apply]**

Fundamentals of Java Persistence with Hibernate; JPA for Object/Relational Mapping, Querying, Caching, Performance and Concurrency; First & Second Level Caching, Batch Fetching, Optimistic Locking & Versioning; Entity Relationships, Inheritance Mapping & Polymorphic Queries; Querying database using JPQL and Criteria API (JPA)

Module: 4: Spring Core **[12 Sessions] [Apply]**

Spring Core, Spring MVC, Spring Boot REST API; Understanding Spring Framework; Using Spring MVC; Building a Database Web App with Spring and Hibernate - Spring AOP (Aspect Oriented Programming); Implementing Spring Security; Developing Spring REST API; Using Spring Boot for Rapid Development.

Module: 5: Automation Tools **[12 Sessions] [Apply]**

Introduction to Automation Tools; Apache Maven: Maven Fundamentals, Software Setup – Command line and Eclipse, pom.xml and Directory Structure, Multi-Module Project Creation, Scopes, Dependency Management, Profiles; Functional/BDD Testing using Selenium, Selenium Fundamentals and IDE, Selenium WebDriver, Installation and Configuration, Locating WebElements, Driver Commands, WebElement Commands.

DELIVERY PROCEDURE(PEDAGOGY): Delivery of Content is done using PPT, Chalk and Talk, IDE, Web Browsers.

TABLE 3:SPECIAL DELIVERY METHOD/PEDAGOGY PLANNED WITH TOPICS				
S. No	**Lecture Number**	**Subtopic as per Lesson Plan**	**Pedagogy title/ Short explanation of adopted pedagogy**	**** At end of semester please update whether activity was done**
1	L2	Byte and Character Stream	Self Learning/Chalk and Talk	
2	L7	Installation and Demo of Eclipse	Self Learning/Chalk and Talk	
3	L10	Building MVC App with Servlets & JSP	Participative Learning/Chalk and Talk	
4	L11	Hibernate	Technology enabled learning/Chalk and Talk	
5	L23	JPA	Technology enabled learning/Chalk and Talk	
6	L25	Spring Boot	Technology enabled learning/Chalk and Talk	
7	L26	Spring REST	Active learning /Chalk and Talk	
8	L27	Spring MVC	Flip class learning /Chalk and Talk	
9	L31	Apache Maven Tool	Technology enabled learning /Chalk and Talk	

10	L35	Selinium Tool	Participative Learning /Chalk and Talk	
The procedure to be adopted in the course for delivering the content will be PPT and Practical Sessions. Students shall be divided into groups for the Projects.				

REFERENCE MATERIALS:

Textbooks:

T1 : Mayur Ramgir, "Full Stack Java Development with Spring MVC, Hibernate, jQuery , and Bootstrap", 1st Edition, Wiley Publication, 2020.

References:

R1: Chris Northwood, "The Full Stack Developer: Your Essential Guide to the Everyday Skills Expected of a Modern Full Stack Developer", 1st edition, APress,2018.
R2: Herbert Schildt, "Java The complete reference" , 11th Edition, ORACLE, 2020.

Web References:

1. https://docs.oracle.com/javaee/6/tutorial/doc/geysl.html
2. https://twww.tutorialspoint.com/jpa/index.htm
3. https://docs.spring.io/spring-framework/docs/current/reference/html/core.html
4. https://www.javatpoint.com/hibernate-tutorial
5. https://maven.apache.org/
6. https://www.selenium.dev/

Paper & Journals

a) Akshat Dalmia, Abhiskek Roy Chowdary , "The New Era of Full Stack Development," 2020 International Journal of Engineering Research and Technology, 2020, pp. 25-29, doi: 10.17577/IJERTV9IS040016.
b) Gurjeet Singh, Madiha Javed, Balwinder Kaur Dhaiwal . Full Stack Web Development: Vision Challenges and Future Scope ," 2022 International Research Journal of Engineering and Technology, 2022, pp. 3083-3089.

SPECIFIC GUIDELINES TO STUDENTS:

1. Students are required to maintain classwork which will be evaluate at the end of every month

2. Students are required to strictly adhere to assignment deadlines.

3. Students are required to actively participate in classroom discussions and other activities which is planned in the classroom.

4. Students are required to have minimum of 75% of attendance to be eligible to attend exam.

COURSE SCHEDULE:

COURSE SCHEDULE FOR THEORY COMPONENT

TABLE 4:COURSE BROAD SCHEDULE				
Sl.No.	**ACTIVITY**	**PLANNED STARTING DATE**	**PLANNED CONCLUDING DATE**	**TOTAL NUMBER OF PERIODS**
01	Overview of the course	20/01/2025	25/01/2025	**04** Lecture [02 Lecture + 02 Practicals]
02	Module: 01	27/01/2025	14/02/2025	**08** [04 Lecture + 04 Practicals]
03	Module: 02	15/02/2025	3/03/2025	**12** [06 Lecture + 06 Practicals]
04	Module:03	4/03/2025	12/03/2025	**12**[06 Lecture + 06 Practical]
05	Mid Term	13/03/2025	20/03/2025	
06	Module:04	21/03/2025	12/04/2025	**12** [06 Lecture + 06 Practicals]
07	Module:05	14/04/2025	7/05/2025	**12** [06 Lecture + 06 Practicals]
10	Assignment	07/05/2025	10/05/2025	
11	End Term	11/05/2025	22/05/2025	

DETAILED SCHEDULE OF INSTRUCTION:

	TABLE 5: DETAILED COURSE SCHEDULE/ LESSON PLAN							
Sl. No	**Session no [with date]**	**Lesson Title**	**Topics** **LO: Student shall be able to**	**LOL (Lower Order Learning)**	**HOL (Higher Order Learning)**	**Course Outcome**	**Teaching Pedagogies**	**Reference (Chapter & Page No.)**
1	L1		Java IO LO1 Define stream. LO2: Outline the I/O classes.	L1	-	CO1	**Chalk and Talk / Interactive Lecture** Experiential Learning	T1-(CH16.5,Pg.822-826)
2	L2		Java generics LO1: List advantages of generics LO2: Demonstrate Generic method and class with example.	L1	-	CO1	**Chalk and Talk/ Interactive Lecture** Experiential Learning	T1-(CH16.5,Pg.832-837)
3	L3		New Features of Java – Annotation LO1: Name some built in annotations. LO2: List different types of annotation.	L1	-	CO1	**Chalk and Talk / Interactive Lecture** Experiential Learning	T1-(CH16.5,Pg.832-837)
4	L4		New Features of Java - Lambda Expression LO1: Define Lambda expression. LO2: Explain Lambda expression and its uses.	L2		CO1	**Chalk and Talk / Interactive Lecture** Experiential Learning	T1-(CH16.5,Pg.832-837)
5	L5		Unit Testing tools – Junit LO1: Define Functional testing.	L1	L4	CO1	**Chalk and Talk/ Interactive Lecture** Experie	T1-(CH16.4,Pg.829-832)

			LO2: Outline how functional testing to be conducted using JUnit. HO1: Analyse the test cases.				ntial Learning	
6	**P1**	Discuss about overview of the course and Laboratory Familiarization **LO1:** Recall the execution of basic java programs.		L1	-	SK1,SK2,SK3,SK54,SK5,SK10	CO1	Lab Sheet
7	**P2**	Experiment No 1: Illustrate the concept of Collection, Serialization and deserialization with file. **LO1** : Practice the concept of Serialization and deserialization in a console application. **LO2:** Apply collection framework to develop a console application		L3	-	SK1,SK2,SK3,SK54,SK5,SK10	CO1	Lab Sheet
8	L6	**Module :02** Java EE Web Applications (Apply)	Servlet API , ServletContext Fundamentals LO1: List the advantages of servlet LO2: Outline Servlet Life Cyle and its architecture.	L1	-	CO2	**PPT / Interactive Lecture** Experiential Learning	T1-(CH1.2,Pg.1-3)
9	L7		JSP Fundamentals, JSP Standard Tag Library, Core & Function Tags LO1: List the three types of scripting elements in JSP. LO2: Tabulate JSP implicit objects	L2	-	CO2	**PPT / Interactive Lecture** Experiential Learning	T1-(CH16.2,Pg.489-501)
10	L8		Building MVC App with Servlets & JSP LO1: Outline the advantages of MVC. LO2: Illustrate MVC architecture with neat diagram.	L3		CO2	**PPT / Interactive Lecture** Experiential Learning	T1-(CH16.5,Pg.508-518
11	**P3**	Experiment No 2: Demonstrate with a java console application that connect with MySQL database and		L3	-	SK1,SK2,SK3,SK54,SK	CO1	Lab Sheet

		perform database operations **LO1:** Use JDBC ODBC drivers to connect the MySQL database and execute SQL commands. **LO2:** Examine the DDL and DML commands with MySQL database and create a console to perform transactions on it.			5,SK7,SK10		
12	**P4**	Experiment No 3: Demonstrate with a web application that connect with MySQL database and perform database operations **LO1:** Use JDBC ODBC drivers to connect the MySQL database and execute SQL commands. **LO2:** Examine the DDL and DML commands with MySQL database and create a console to perform transactions on it.	L3	-	SK1,SK2,SK3,SK54,SK5,SK7,SK10	CO1	Lab Sheet
13	**P5**	Experiment No. 4: Study JUnit functional testing tool and create test cases to test with an application. **LO1:** Demonstrate the Unit Test and to apply annotations, methods of assertion and write the test cases and also perform some task before and after each test. **LO2:**Use unit testing to create test cases on Junit4 to find the maximum number for array using Eclipse IDE.	L2	-	SK1,SK2,SK3,SK54,SK5,SK10,SK7	CO1	Lab Sheet
14	**L9**	**MID TERM EXAM MODULE-1 AND 2 (CO1 & CO2)**			**90 Minutes**	**50**	**25%**
	L10						
15	L11	**Module :03** Java Persistence using JPA and Hibernat	Fundamentals of Java Persistence with Hibernate LO1: Outline the advantages of hibernate framework. LO2: Illustrate Hibernate architecture with diagram.	L3	-	CO3	**PPT / Interactive Lecture** Experiential Learning	T1-(CH1.6,Pg.25-26)
16	L12		JPA for Object/Relational Mapping LO1:Define ORM LO2:Outline Steps involved in ORM	L1	-	CO3	**PPT / Interactive Lecture** Experiential Learning	T1-(CH1.3,Pg.15-19)

17	L13	e (Apply)	Querying , Caching LO1: Define HQL. LO2: iist out the advantages of HQL.	L2	-	CO3	**PPT / Interactive Lecture** Experiential Learning	T1-(CH1.3,Pg.20-24)
18	L14		Performance and Concurrency LO1: Describe how to improve the performance. LO2: Define concurrency.	L2	-	CO3	**PPT / Interactive Lecture** Experiential Learning	T1-(CH5.1,Pg147-170)
19	L15		First & Second Level Caching, Batch Fetching LO1: Define First level caching LO2: Explain how Second level caching is better than first level caching	L2	-	CO3	**Problem based Learning**	T1-(CH9.1.,Pg266-280)
20	L16		Optimistic Locking & Versioning LO1:Define optimistic locking. LO2: Illustrate versioning	L3		CO3	**PPT / Interactive Lecture** Experiential Learning	T1-(CH11.1.,Pg.327-333)
21	L17		Entity Relationships, Inheritance Mapping LO1: Name the types of Entity relationship in HQL. LO2: Explain various ER in hibernate.	L2		CO3	**PPT / Interactive Lecture** Experiential Learning	T1-(CH11.5.,Pg.342-352
22	L18		Polymorphic Queries, Querying database using JPQL, Criteria API (JPA) LO1: Define polymorphic Query. LO2: Distinguish between normal query and polymorphic query	L2		CO3	**PPT / Interactive Lecture** Experiential Learning	T1-(CH16.5,Pg.508-518
23	**P6**		Experiment No. 5: Illustrate the Servlet API to develop a web	L3		SK1,SK2,SK3,S	CO2	Lab Sheet

			application connect with a database. **LO1:** Use Servlet API to develop a web application that connects with MySQL database. **LO2:** Apply Session based servlet to develop a web application that connect with MySQL database			K54,SK5,SK10		
24	**P7**		Experiment No. 6: Illustrate the JSP develop a web application connect with a database. **LO1:** Use Servlet API to develop a web application that connects with MySQL database. **LO2:** Apply JSP to develop a web application that connect with MySQL database	L3		SK1,SK2,SK3,SK54,SK5,SK10	CO2	Lab Sheet
25	**P8**		Experiment No. 7: Demonstrate MVC architecture with simple and integrate with JDBC. **LO1:** Use MVC design pattern to develop a small web application to validate the user name and password. **LO2:** Apply MVC architecture to create a web application that connects with MySQL database.(Employee Registration and	L3	-	SK1,SK2,SK3,SK54,SK5,SK10,SK7	CO2	Lab Sheet
26	L19	**Module :04** Spring Core (Apply)	Understanding Spring Framework LO1: Illustrate the advantages of Spring framework. LO2: Illustrate Spring framework architecture.	L3	-	CO4	**PPT / Interactive Lecture** Experiential Learning	T1-(CH15.3.,Pg.452-460)
27	L20		Using Spring Boot for Rapid Development, Spring Boot REST API Spring MVC	L2	-	CO4	**PPT / Interactive Lecture**	T1-(CH19.1,Pg.615-622)

			LO1: Differentiate between Spring and Spring Boot. LO2: Define IOC.				Experiential Learning	
28	L21		Using Spring MVC; Building a Database Web App with Spring and Hibernate. LO1: Explain the ways to develop MVC applications with database. LO2: Distinguish between MVC and Spring MVC.	L3		CO4	Active Learning	T1-(CH16.5,Pg.508-518
29	L22		Spring AOP (Aspect Oriented Programming) LO1: Explain about AOP and its uses. LO2: List out the steps to do AOP	L2		CO4	**PPT / Interactive Lecture** Experiential Learning	T1-(CH16.5,Pg.508-518
30	L23		Implementing Spring Security LO1: Define Spring Security. LO2: Explain how to implement Spring security	L2		CO4	**PPT / Interactive Lecture** Experiential Learning	T1-(CH16.5,Pg.508-518
31	**P9**		Experiment No. 8: Demonstrate Hibernate framework with ORM. **LO1:** Apply Hibernate ORM concept to develop a console application using Eclipse IDE to store and retrieves the persistent object with MySQL using XML. **LO2:** Apply Hibernate ORM concept to develop a console application using Eclipse IDE to store and retrieves the persistent object with MySQL using annotation.	L3	-	SK1,SK2,SK3,SK54,SK5,SK10	CO3,CO5	Lab Sheet
32	**P10**		Experiment No. 9: Apply Spring Boot framework to	L3	-	SK1,SK2,SK3,S	CO4,CO5	Lab Sheet

			perform Create database and table operations on data base **LO1:** Apply spring framework to build a simple Spring Application, which will connect the database file. **LO2:** Use spring framework in eclipse IDE to create a simple application.			K54,SK5,SK7		
33	**P11**		Experiment No. 10: Apply Spring Boot framework to perform Update and Delete operations on data base **LO1:** Apply spring framework to build a simple Spring Application, which will connect the database file. **LO2:** Use spring framework in eclipse IDE to create a simple application.	L3	-	SK1,SK2,SK3,SK54,SK5,SK7	CO4,CO5	Lab Sheet
34	L24	**Module :05** Automation Tool(Apply)	Apache Maven: Maven Fundamentals, Software Setup – Command line and Eclipse LO1: List the tasks of Maven. LO2: Distinguish between ANT and Maven.	L2		CO5	**Technology based Learning/** /Chalk and Talk	T1-(CH16.5,Pg.508-518
35	L25		pom.xml and Directory Structure LO1: Define POM LO2: Explain Maven directory structure	L2		CO5	**PPT / Interactive Lecture** Experiential Learning	T1-(CH16.5,Pg.508-518
36	L26		Multi-Module Project Creation. LO1: Explain Maven project and it advantages. LO2: List the steps involved in multi module project in Maven.	L2		CO5	**PPT / Interactive Lecture** Experiential Learning	T1-(CH16.5,Pg.508-518

37	L27		Scopes, Dependency Management, Profile LO1: Define Maven repository. LO2: Explain different types of Maven repository .	L2		CO5	**PPT / Interactive Lecture** Experiential Learning	T1-(CH16.5,Pg.508-518
38	L28		Selenium Fundamentals and IDE LO1: Outline the automation testing tools for functional automation. LO2: List the automation testing tools for non functional automation. HO1: Analyse sample test cases	L1	L4	CO5	**Activity Learning**	T1-(CH16.5,Pg.508-518
39	L29		Selenium WebDriver, Installation and Configuration LO1: Review Selenium Webdirver LO2: List the Functions of WebDriver.	L2		CO5	**PPT / Interactive Lecture** Experiential Learning	T1-(CH16.5,Pg.508-518
40	L30		Locating WebElements, Driver Commands, WebElement Commands. LO1: Describe Selenium feature and limitations, Tool suite. LO2: Tabulate WebElements Drivers and commands.	L2		CO5	**Flipped Class**	T1-(CH16.5,Pg.508-518
41	**P12**	Experiment No. 11: Study Spring Boot with AOP. **LO1:**use SpringBoot to create a simple application in Maven project. **LO2:** Using Spring Boot framework to build a simple calculator application.		L3	-	SK1,SK2,SK3,SK54,SK5,SK10	CO4,CO5	Lab Sheet
42	**P13**	Experiment No. 12: Study of Spring MVC **LO1:** Apply Spring MVC to build application using Maven project. **LO2:** Apply different types of set and join operations on database and		L3 L3	-	SK1,SK2,SK3,SK54,SK5,SK10	CO4,CO5	Lab Sheet

		show the output of REST application.					
43	**P14**	Experiment No. 13: Study of Spring RESTful Web Service **LO1:**Develop a RESTful web services project with Spring Boot and include in a web application. **LO2:** Build web services and make use of Spring Boot for rapid development..	L3 L3	-	SK1,SK2,SK3,SK54,SK5,SK10	CO4	Lab Sheet
44	**P15**	Experiment No. 14: Develop E-Commerce website using Hibernate/ SpringBoot tools **LO1:**Develop a RESTful web services project with Spring Boot and include in a web application. **LO2:** Build web services and make use of Hibernate for rapid development..	L3 L3	-	SK1,SK2,SK3,SK54,SK5,SK10	CO4	Lab Sheet

COURSE SCHEDULE FOR LAB COMPONENT

TABLE 4: COURSE BROAD SCHEDULE

Sl. No.	ACTIVITY	PLANNED STARTING DATE	PLANNED CONCLUDING DATE	TOTAL NUMBER OF PERIODS
01	Over View of the course	20/01/2025	20/01/2025	01
02	Laboratory Familiarization	21/01/2025	21/01/2025	01
03	Demonstration of Experiments / Skills	22/01/2025	14/05/2024	26
04	Assignment	01/04/2024	05/04/2024	01
05	Summary of the Laboratory tasks	20/05/2024	24/05/2024	01
06	End Term Examination	06/06/2024	22/06/2024	

SKILL SETS:

Graduate of the B. Tech Program in Computer Science and Engineering shall be able to:

1. **An attitude of enquiry.**
2. **Confidence and ability to tackle new problems.**
3. **Ability to interpret events and results.**
4. **Ability to work as a leader and as a member of a team.**
5. **Assess errors in systems/processes/programs/computations and eliminate them.**
6. Observe and measure physical phenomena.

7.	**Write reports.**
8.	**Select suitable equipment, instrument, materials & software**
9.	Locate faults in system/Processes/software.
10.	**Manipulative skills for setting and handling systems/Process/ Issues**
11.	The ability to follow standard /legal procedures.
12.	An awareness of Professional Ethics.
13.	Need to observe safety/General precautions.
14.	To judge magnitudes/Results/issues without actual measurement/actual contacts

ASSESSMENT SCHEDULE

TABLE6: ASSESSMENTSCHEDULE							
Sl. No.	**AssessmentType**	**Contents**	**Course Outcomes**	**Duration In Hours**	**Marks**	**Weightage**	**Tentative Date**
1	Mid Term Exam	Module1,2	CO1&CO2	90 Minutes	50 (Theory)	25%	17.03.2025
2	Assignment/ Quiz [Theory Continuous Assessment]	All Modules	CO1,CO2, CO3, CO4 & CO5	NA	25	12.5%	18.4.2025
3	Lab Continuous Assessment	All Modules	CO1,CO2, CO3,CO4 & CO5	NA	25	12.5%	2.5.2025
4	End Term Exam	Module1 to Module5	CO1,CO2, CO3, CO4 & CO5	180 Minutes	100	50%	26.5.2025

COURSE CLEARANCE CRITERIA:

AS PER ACADEMIC REGULATIONS OF THE UNIVERSITY

MAKEUP EXAM POLICY:

-AS PER ACADEMIC REGULATIONS OF THE UNIVERSITY

CONTACT TIMINGS IN THE CHAMBER FOR ANY DISCUSSIONS: (Here mention the fixed slots on any of the week days for students to come and interact with you)

Students are encouraged to come for any discussions on this course at my chamber L2-16 between 3:00 PM-4:00 PM

SAMPLE THOUGHT PROVOKING QUESTIONS:

TABLE 7: SAMPLE THOUGHT PROVOKING QUESTIONS				
SL NO	**QUESTION**	**MARKS**	**COURSE OUTCOME NO.**	**BLOOM'S LEVEL**
1	Create a weather detailed component using Angular. Enter city name to get the weather details. The component must have following functionalities: 1. An array of objects is passed as a prop to the component, where each object is a weather record for a single city. The object has 4 properties : name [string], temperature in the city [string], wind in the city [string], humidity in the city [string] 2. There is an input field where the user can type the name of city to get the details of weather.	5	CO1	Apply
2	An organization is managing their leave application process manually. Develop an application for managing leaves through online. Employee can apply leave though application and check their available balance. Request	5	CO1	Apply

	should forward to the manager of the employee. He/She can approve/reject the application. Employee can check the response using their login.			
3	University is organizing an intra college cultural festival. It consists of more than 100 different events. All events details should be displayed with all rules and regulations of the event. Students can register for any event with team members. Last date for the registration process also should be mentioned in every event page. Develop an application to demonstrate this.	5	CO2	Apply
4	A housing society is collecting maintenance charge from all residents of the society. The amount is spending for various activities of the society. Develop an application for managing their fund and collecting fund also through online. Any resident wants to see the monthly expenditure of the society, they have to view through the application.	5	CO2	Apply
5	Explain fetch type Lazy and eager. For a many-to-many mapping between two tables product and customer, what will be the fetch-type. Implement both the table using hibernate. Also explain the various annotations 5used in respective object-relationship mapping.	5	CO3	Apply
6	Design the following web application as per MVC architecture. A shopping store has to keep a product catalogue. Customers can visit the store to know the details about the product and process purchase order. Define the model classes, Service classes and suitable controllers using spring MVC module.	5	CO3	Apply
7	Create a module in java, create a service that will load the data from a http server. Register the service within that module. Integrate the modules and test it.	5	CO4	Apply
8	Create a module using Maven Project and test it with Selinium test tool.	5	CO5	Apply

Sl No.	Question	Task No.	Course Outcome No.
1	Develop a application to implement the following. Create a super class called Train which has attributes like trainName, trainNumber, source, destination, no.of seats, cost. Make sure, you initialise the basicCost for few destination. Use the setter methods to set the details. Derive two sub classes such as Ordinary and Superfast. Add methods in such as Check_SeatAvailablity, BookTicket. The Ordinary train has three categories Seater, Sleeper, ACchair. The superFast train has sleeper, ThreeTierAc, TwoTierAc. Implement the services to check seatAvailablity(), bookTicket(), computeCost(). While booking, if the chosen train is ordinary, and for Seater, the cost is equal to the baseCost, for sleeper it is baseCost + 30% of baseCost. For ACChair, it isbaseCost+60% of the baseCost. Override the computeCost() method in the SuperFast class, and calculate the cost accordingly. For for sleeper it is baseCost + 50% of baseCost. For ThreeTierAc, it is baseCost+90% of the baseCost, For TwoTierAc, it is baseCost+125% of the baseCost. Calculate the cost and confirm the booking details completely. Demonstrate with appropriate web based application.	1	CO2

2	Explain fetch type Lazy and eager. For a many-to-many mapping between two tables product and customer, what will be the fetch-type. Implement both the table using hibernate. Also explain the various annotations used in respective object-relationship mapping.	2	CO3
3	Use Spring-JPA to implement the shopping database containing product-produc category-feature-customer tables. Define suitable Entity and service classes, create controller using spring-web-mvc, Define repositories using JPA. Test web application using command line or XML.	3	CO4

TARGET SET FOR COURSE OUTCOME ATTAINMENT:

TARGETSETFORCOURSEOUTCOMEATTAINMENT:

TABLE8:TARGETSETFORATTAINMENTOFEACHCO ANDATTAINMENTANALYSISAFTER RESULTS						
Sl. No.	**CO. No.**	**CourseOutcomes**	**Threshold Setforthe CO**	**Target set for attainment in percentage**	**Actual C.O. Attainment In Percentage***	**Remarks on attainment &Measuresto enhance the attainment***
1	CO1	Practice the use of Java for full stack development. (Remember)	65	60%		
2	CO2	Demonstrate web applications using Java EE.	65	70%		
3	CO3	Solve simple applications using Java Persistence and Hibernate.	60	70%		
4	CO4	Apply concepts of Spring to develop a Full Stack application.	60	70%		
5	CO5	Employ automation tools like Maven, Selenium for Full Stack development.	60	70%		

***TO BE FILLED AFTER END TERM EXAM WITH ACTUAL ATTAINMENT VALUES**

Signature of the course Instructor In-Charge (s)

APPROVAL:

This course has been duly verified Approved by the D.A.C.

Signature of the Chairperson D.A.C.

Name and signature of the Instructor In-Charge (s)AFTER completing entries in Table number 3 and 8 at end of semester:

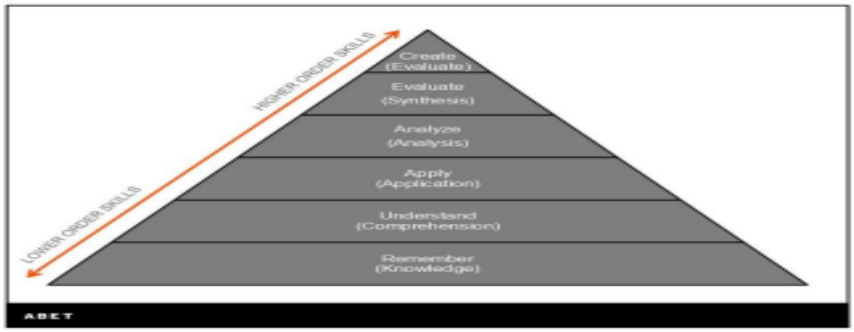
Name and signature of the DAC Chairperson AFTER completing entries in Table number 3 and 8 at end of semester:

REVISED BLOOM'S TAXONOMY SAMPLE VERBS

Learning Outcomes Verbs at Each Bloom Taxonomy Level to be used for writing the course Outcomes.

TABLE 9: REFERENCE SAMPLES OF BLOOMS TAXONOMY VERBS		
Cognitive Level	Illustrative Verbs	Definitions
Remember	arrange, define, describe, duplicate, identify, label, list, match, memorize, name, order, outline, recognize, relate, recall, repeat, reproduce, select, state	remembering previously learned information
Understand	classify, convert, defend, discuss, distinguish, estimate, explain, express, extend, generalize, give example(s), identify, indicate, infer, locate, paraphrase, predict, recognize, rewrite, report, restate, review, select, summarize, translate	grasping the meaning of information
Apply	apply, change, choose, compute, demonstrate, discover, dramatize, employ, illustrate, interpret, manipulate, modify, operate, practice, predict, prepare, produce, relate schedule, show, sketch, solve, use write	applying knowledge to actual situations
Analyze	analyze, appraise, breakdown, calculate, categorize, classify, compare, contrast, criticize, derive, diagram, differentiate, discriminate, distinguish, examine, experiment, identify, illustrate, infer, interpret, model, outline, point out, question, relate, select, separate, subdivide, test	breaking down objects or ideas into simpler parts and seeing how the parts relate and are organized
Evaluate	appraise, argue, assess, attach, choose, compare, conclude, contrast, defend, describe, discriminate, estimate, evaluate, explain, judge, justify, interpret, relate, predict, rate, select, summarize, support, value	making judgments based on internal evidence or external criteria
Create	arrange, assemble, categorize, collect, combine, comply, compose, construct, create, design, develop, devise, explain, formulate, generate, plan, prepare, propose, rearrange, reconstruct, relate, reorganize, revise, rewrite, set up, summarize, synthesize, tell, write	rearranging component ideas into a new whole

REVISED BLOOMS TAXONOMY



REMEMBER	UNDERSTAND	APPLY	ANALYZE	EVALUATE	CREATE
Arrange	Classify	Apply	Analyze	Appraise	Arrange
Define	Compare	Change	Appraise	Argue	Assemble
Describe	Compute	Choose	Break down	Assess	Construct
Duplicate	Convert	Calculate	Calculate	Choose	Collect
Identify	Contrast	Classify	Categorize	Compare	Compose
Label	Defend	Demonstrate	Compare	Contrast	Create
List	Describe	Determine	Contrast	Criticize	Design
Match	Differentiate	Employ	Criticize	Defend	Develop
Name	Distinguish	Examine	Debate	Discriminate	Formulate
Order	Estimate	Illustrate	Diagram	Estimate	Integrate
Outline	Explain	Interpret	Differentiate	Evaluate	Manage
Recite	Extrapolate	Modify	Discriminate	Explain	Organize
Recognize	Generalize	Operate	Distinguish	Interpret	Plan
Relate	Interpolate	Practice	Examine	Judge	Prepare
Repeat	Locate	Predict	Experiment	Measure	Prescribe
Reproduce	Paraphrase	Prepare	Identify	Predict	Produce
Select	Predict	Produce	Infer	Rank	Propose
State	Recognize	Restructure	Inventory	Rate	Specify
Tabulate	Review	Schedule	Relate	Recommend	Synthesize
Tell	Summarize	Sketch	Separate	Select	Write
	Translate	Solve	Subdivide	Support	
		Use	Test	Validate	