DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE MODULE OF THE SUBJECT TAUGHT FOR THE SESSION 2025-26

(EVEN SEM)
Course Syllabus with CO's

Faculty Name: Mrs. Bindushree V				Academic Year: 2025 - 2026			
Department: Computer Science & Engineering							

Course Code	Course Title	Core/AEC/ Elective	Pre-Requisite	Contact Hours			Total Hrs/ Sessions
				L	T	P	
BCLS657D	DEVOPS	AEC	Basic understanding of Linux/Unix system concepts	-	-	2	24P

Course objectives:

1. To introduce DevOps terminology, definition & concepts
2. To understand the different Version control tools like Git, Mercurial
3. To understand the concepts of Continuous Integration/ Continuous Testing/ Continuous Deployment)
4. To understand Configuration management using Ansible
5. Illustrate the benefits and drive the adoption of cloud-based Devops tools to solve real world problems

Sl, No	Experiments
1.	**Introduction to Maven and Gradle:** Overview of Build Automation Tools, Key Differences Between Maven and Gradle, Installation and Setup.
2.	**Working with Maven:** Creating a Maven Project, Understanding the POM File, Dependency Management and Plugins
3.	**Working with Gradle:** Setting Up a Gradle Project, Understanding Build Scripts (Groovy and Kotlin DSL), Dependency Management and Task Automation
4.	**Practical Exercise:** Build and Run a Java Application with Maven**,** Migrate the Same Application to Gradle
5.	**Introduction to Jenkins:** What is Jenkins?, Installing Jenkins on Local or Cloud Environment, Configuring Jenkins for First Use
6.	**Continuous Integration with Jenkins:** Setting Up a CI Pipeline**,** Integrating Jenkins with Maven/Gradle**,** Running Automated Builds and Tests

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7.	**Configuration Management with Ansible:** Basics of Ansible: Inventory, Playbooks, and Modules, Automating Server Configurations with Playbooks, Hands-On: Writing and Running a Basic Playbook
8.	**Practical Exercise:** Set Up a Jenkins CI Pipeline for a Maven Project, Use Ansible to Deploy Artifacts Generated by Jenkins
9.	**Introduction to Azure DevOps:** Overview of Azure DevOps Services, Setting Up an Azure DevOps Account and Project
10.	**Creating Build Pipelines:** Building a Maven/Gradle Project with Azure Pipelines, Integrating Code Repositories (e.g., GitHub, Azure Repos), Running Unit Tests and Generating Reports
11.	**Creating Release Pipelines:** Deploying Applications to Azure App Services, Managing Secrets and Configuration with Azure Key Vault, Hands-On: Continuous Deployment with Azure Pipelines
12.	**Practical Exercise and Wrap-Up:** Build and Deploy a Complete DevOps Pipeline, Discussion on Best Practices and Q&A

Course outcomes (Course Skill Set):

At the end of the course the student will be able to:

1. Demonstrate different actions performed through Version control tools like Git.
2. Perform Continuous Integration and Continuous Testing and Continuous Deployment using Jenkins by building and automating test cases using Maven & Gradle.
3. Experiment with configuration management using Ansible.
4. **Demonstrate Cloud-based DevOps tools using Azure DevOps.**

The Correlation of Course Outcomes (CO's) and Program Outcomes (PO's)

Subject Code:	BCSL657D	TITLE: DEVOPS		Faculty Name:		

List of Course Outcomes	Program Outcomes												Total
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	
CO-1	2	2	2	2	2	-	-	-	-	-	-	1	11
CO-2	3	3	3	2	2	-	-	-	-	-	-	2	15
CO-3	3	3	3	2	3	-	-	-	-	-	-	2	16
CO-4	2	2	2	2	2	-	-	-	-	-	-	1	11
Total	10	10	10	8	9	-	-	-	-	-	-	6	53

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The Correlation of Course Outcomes (CO's) and Program Specific Outcomes (PSO's)

Subject Code:	BCSL657D		TITLE: DEVOPS		Faculty Name:	
List of Course Outcomes	Program Specific Outcomes				Total	
	PSO-1		PSO-2			
CO-1	2		2		4	
CO-2	3		2		5	
CO-3	2		2		4	
CO-4	2		2		4	
Total	9		8		17	

Note: 3 = Strong Contribution, 2 = Average Contribution, 1 = Weak Contribution, - =No Contribution

HOD