Name of Department: - Computer Science and Engineering

1. Subject Code: TCS 651 Course Title: **DevOps on Cloud**
2. Contact Hours: 3 - 2
3. Semester: **VI**

4. Prerequisite: Students should have a strong technology background, an understating of cloud infrastructure and skill with a scripting language to master this course.

5. Course Outcomes: On completion of this course, the student should be able to

1. Define and understand ideas of DevOps.
2. Describe and demonstrate how DevOps relate to working in the cloud.
3. Describe and demonstrate how DevOps relate to Agile and ITIL.
4. Use a public/private cloud environment as a framework to examine the ideas of DevOps.
5. Examine some use cases, possible architectures, automation, continuous delivery, and the public/private cloud toolsets for DevOps.
6. Implement the software engg practices

6. Details of the Course: -

UNIT	CONTENTS	Contact Hrs
Unit – I	An introduction to Software Engineering, SDLC, Agile Framework, An introduction to DevOps, Gain insights of the DevOps environment, DevOps Vs Agile, DevOps Ecosystem.	**9**
Unit - II	Version Control with Git, Install GIT and work with remote repositories, GIT workflows, Branching and Merging in Git. Understand the importance of Continuous Integration, Introduction to Jenkins, Jenkins management. Build and automation of Test using Jenkins and Maven.	**9**
Unit – III	Continuous Testing, learn and Install Selenium, create test cases in Selenium, Integrate Selenium with Jenkins, Continuous Deployment, Install and configure puppet, understand master-slave architecture of puppet.	**10**
Unit – IV	Introduction to Docker, understanding images and containers, Docker Ecosystem, Introduction to Docker Networking, configuration management, configuration management with Ansible, Differentiate Ansible and Puppet.	**8**
Unit – V	Containerization using Kubernetes, Integrate Docker and Kubernetes, Auto-scaling, Continuous monitoring with Nagios, operate continuous monitoring tools, Implement Nagios commands.	**8**
	Total	**44**

Books:

1. Gene Kim and George Spafford ,“The Visible Ops Handbook by Kevin Behr”, IT Process Institute.
2. Michael Hüttermann ,”DevOps for Developers”.

3. by Eliyahu M. Goldratt, Jeff Cox , David Whitford (Other Contributor) ,“The Goal: A Process of Ongoing Improvement”,
4. Material provided by the instructor

References:

5. “Continuous Delivery: Reliable Software Releases through Build, Test, and Deployment Automation “, Jez Humble and David Farley
6. “The Phoenix Project”, Gene Kim, Kevin Behr, George Spafford