140IR5159 DEVOPS TECHNOLOGIES

1. Title of the Course: DevOps Technologies

2. Course Objectives:

- Explain, install, and navigate devops process and tools.
- Learn CI/CD process that's followed in Industry for developing a product.

3. Prerequisites:

Basic knowledge of computer science. Should have a minimal programming knowledge

4. Course Outcomes:

At the end of this course, the students will be able to:

- Explain CI/CD strategy followed in project development.
- Version their code on day to day basis
- Automate the IT infrastructure

5. Teaching Strategies:

- Group activities
- Power point presentations and Video Presentations
- Practical demonstrations

6. Syllabus:

Module I **Introduction** **6**

DevOps - Cloud Computing (AWS/OpenStack/VMware) – Version Control Introduction – Continuous Integration – Continuous Deployment

Module II **GIT** **8**

Introduction to GIT – Advantage of using GIT – Install GIT – Setting up Permissions – Branching Strategy – Clone Repository – Import existing code into newly created repository - Pull Request – Push Request – Merging.

Module III **Continuous Integration** **8**

CI tools – Introduction to Jenkins – Jenkins Installation - Static Analysis tools (SonarQube) - Generating Build.

Module IV **Continuous Deployment** **8**

CD tools – Introduction to Ansible – Install Ansible – Ansible playbook and inventory file – How to run playbook - Functional testing – Performance testing

7. Course Plan:

Theory : 10 Hrs
Practical : 20 Hrs
Total : 30 Hrs

S. No	Topic	Period (Hrs)
Module I:	**Introduction**	
1.	DevOps - Cloud Computing (AWS/OpenStack/VMware)	1
2.	Version Control Introduction	1
3.	Continuous Integration	2
4.	Continuous Deployment	2
Module II:	**GIT**	
5.	Introduction to Git – Advantage of Using Git	1
6.	Install GIT – Setting up Permissions	2
7.	Clone Repository/Import existing code into newly created repository	2
8.	Branching Strategy – Pull/Push Request – Merging	3
Module III:	**Continous Integration**	
9.	CI tools – Introduction to Jenkins	1
10.	Jenkins Installation	2
11.	Static Analysis tools (Sonarqube)	1
12.	Setting up CI tools locally	1
13.	Generating Build	3
Module IV:	**Continous Deployment**	
14.	CD tools	1
15.	Introduction to Ansible	1
16.	Install Ansible	1
17.	Ansible Concepts - Playbook and inventory file	3
18.	How to run playbook - Functional testing – Performance testing	2

8. Course Assessment:

S.No.	Description	Max.Marks
1.	**Assessment -1** Install Git and check-in code into Repository	40
2.	**Assessment -2** Jenkins Installation, Setup Job and trigger successful build	40
3.	**Assessment -3** Ansible Playbook to install packages/restart machines across network	20
	Total	**100**

9. References:

a. Continuous Delivery: Reliable Software Releases through Build, Test, and Deployment Automation by Jez Humble (Author), David Farley (Author), Martin Fowler.
b. Ansible: Up and Running by Lorin Hochstein (Author)

10. Resource Requirements:

- Personal Computers, Laptops, projector and printers
- Lecture hall and laboratory