CERTIFICATE COURSE ON Cloud and DevOps
2. Continuous Integration/ Continuous   deployment with Git, Jenkins and Ansible

UNIT-I

Why DevOps, what is DevOps, what is SDLC, what is Agile and Scrum

Linux Basics: Linux Introduction Terminals and command structure and shells, Linux File system, Navigation in file system, Creating files and folders, Permissions for files and folders CHMOD, Deleting files and folders, Copying and moving and renaming files and folders, Vi editor commands, Find command, Viewing files using cat tail head, Compare files diff and cmp, awk and sed command and its usage,File archiving and compressions, Searching files in vi and grep,wc usage, Commands (ps, kill, top, systemctl, free, df, iostat, netstat, /var/log, hostnamectl, uname)

UNIT-II

Git: Version Control Basics, Commits and Revisions, Branches, Stashing, Branching in Depth, Rebase, Tagging, Sub-Projects with Sub-Modules and Subtrees, Git Hooks, Git Flow.

CI/CD: Continuous Integration, Continuous Delivery, Continuous Deploymentand Importance of CI/CD Engines in Building DevOps Pipelines.

UNIT-III

Jenkins: Key Constructs of Jenkins

a. Job

b. Build

c. Version Control System

d. Test Executions, Plugins

e. CLI

f. Rest API

g. Security

h. Distributed Builds

Jenkins Internals:

a. Jenkins's execution under the hood

b. Importance of Environment Variables

c. Why Jenkins is called as Cron on Steroids

Jenkins Installation, Jenkins Distributed Build Setup (Multi node configuration), Jenkins Administration, Jenkins Views and Free Style Projects, Parametrization and Up/DownStream Projects, Jenkins Pipelines , Groovy and Jenkins DSL, Jenkins Integrations with other tools

Continuous Integration (Ansible)

UNIT-IV

System Architecture and Design of Ansible:

a. Installation and Configuration

b. Core Concepts of Ansible

i. Inventory
ii. Module
iii. Adhoc Command
iv. Playbooks
v. YAML
c. Inventory and Playbook Parsing
d. Module transport and Execution
e. Variable Types
f. Variable Precedence
g. External data access

UNIT-V

Ansible Essentials:
a. Static Inventories
b. Dynamic Inventories
c. Common Modules
d. Playbook syntax
e. Conditionals
f. Error Handling
g. Variables and Facts
h. Templates
i. Roles and Ansible Galaxy
j. Parallelism

Protecting Secrets with Ansible (Encrypting data at rest & Mixing Encrypting with plain YAML), Controlling Task Conditions (Failure, change, Error recovery & Iterative tasks with loops), Reusable Ansible Content with Roles (Task, handler, variable and playbook inclusion concepts & Roles), Troubleshooting Ansible (Playbook logging and verbosity, Variable introspection & Debugging code execution)