

## Understanding Gitlab & GitLab CI/CD

**Duration:** 4 days (8hrs/day) (32 hours)

**Pre-requisite:** Basic Knowledge of Linux & Docker

**Course Objective:** This course aims to provide a comprehensive understanding of Git and GitLab, equipping participants with the skills to manage repositories, collaborate on projects, and implement CI/CD pipelines. Through hands-on labs, participants will learn key Git commands, GitLab features, and pipeline optimization techniques. By the end, they will be proficient in using GitLab for efficient version control and project management.

**DC:** Koenig DC and User's own Gitlab account      **Courseware:** Unofficial (PDF)

### Module 1 –Introduction to GitLab & Git

Understanding Git  
Working Architecture of Git  
Installing Git  
Understanding Gitlab  
Gitlab working & Gitlab UI

**Lab: All above topics with demonstration**

### Module2: Understanding Basic Git

Staging and Committing files  
Branches & Merging Branches  
Tags  
Types of Merge  
Resbasing & Resetting  
Logging Filters in Git  
Stashing

**Lab: All above topics with demonstration**

### Module 3 – Understanding GitLab Features

**Lab:** Exploring Remote Repository Options  
**Lab:** Protecting Branches  
**Lab:** Creating Merge Requests  
**Lab:** Setting Approvals for Merge Requests  
**Lab:** Merging Pull Requests  
**Lab:** Different Types of Merge  
**Lab:** Forking Public Repository  
Understanding Contributors  
Understanding RBAC in GitLab  
Understanding use of GitLab Issues and Labels in Plan  
**Lab:** Creating GitLab Issues and Labels  
Understanding Features like Watch, Star, Raw & Blame on GitLab  
**Lab:** Using Features like Watch, Star, Raw & Blame on GitLab  
**Lab:** Deploying Static HTML Website Using GitLab Pages

## **Module 4: Introduction to CI/CD**

Understanding CI/CD  
CI/CD terms  
SDLC and traditional approach  
Why CI/CD

## **Module 5 – Pipeline**

Pipeline  
Setting up Git branches  
Creating and executing first pipeline  
Understanding logs of pipeline  
**Lab: All above topics with demonstration**

## **Module 6 – Pipeline Indepth**

Creating Node.js project  
Building application with pipeline  
Pipeline stages  
Running job as background process  
Saving artifacts  
Optimizing pipeline  
**Lab: All above topics with demonstration**

## **Module 7– GitLab Runners**

Introduction to GitLab Runners  
Shared GitLab Runners  
GitLab Runners installation  
GitLab Runners installation on local machine  
**Lab: All above topics with demonstration**

## **Module 8 – Run Pipelines using Local Runners**

Create python project and Dockerfile  
Gitlab pipeline for building image  
Run pipeline on local machine  
**Lab: All above topics with demonstration**

## **Module 9 – Variables in GitLab**

Variables in Gitlab  
Predefined variables  
Creating custom variables  
**Lab: All above topics with demonstration**

## **Module 10 – Project - Create GitLab CI Pipeline**

Adding testing stage in pipeline  
Adding build stage in pipeline  
Adding push stage in pipeline  
**Lab: All above topics with demonstration**