

CI/CD in Bioinformatics Pipelines — Hands-on

Deliver bioinformatics workflows with software-engineering rigor. This module shows how to build continuous integration and delivery systems for Snakemake/Nextflow/Galaxy pipelines—automated testing with golden datasets, container builds and security scans, artifact/version management, policy gates, and push-button deployments across HPC and Cloud.

CI/CD in Bioinformatics Pipelines

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Session 1 — Git, CI Basics & Testable Pipelines Session 2 — Containers, Artifacts & Security Scans
Session 3 — Releases, Policies & Environments Session 4 — Mini Capstone: Prod-Ready CI/CD

Session 1

Fee: Rs 16,400 [Apply Now](#)

Git, CI Basics & Testable Pipelines

Git workflow & CI runners

[GitHub Actions](#) [GitLab CI](#) [Jenkins](#)

Make pipelines testable

[golden datasets](#) [unit/integration tests](#) [smoke runs](#)

Caching & speed-ups

[conda/mamba locks](#) [artifact reuse](#) [matrix builds](#)

Session 2

Fee: Rs 22,000 Apply Now

Containers, Artifacts & Security Scans

Build & publish images

Docker/Apptainer **multi-arch buildx** **GHCR/ECR/GCR**

Security & provenance

Trivy/Grype scans **SBOM (CycloneDX/Syft)**

Cosign/SLSA attestations

Artifacts & reports

MultiQC PDFs **result manifests** **dataset registries**

Session 3

Fee: Rs 27,600 Apply Now

Releases, Policies & Environments

Versioning & changelogs

semver/tags **release notes** **backports/LTS**

Policy-as-code & quality gates

OPA/Conftest **Great Expectations** **required checks**

Environments & secrets

dev→staging→prod **secrets managers** **RBAC/IAM**

Session 4

Fee: Rs 34,200 Apply Now

Mini Capstone: Prod-Ready CI/CD

Implement CI/CD for a real pipeline (Snakemake/Nextflow)

Theory + Practical

Deploy to HPC/Cloud safely

blue-green/canary **rollbacks** **observability**

Deliverables: repo, CI/CD config & release assets

pipelines + tests **container images** **PDF/HTML**
runbook