Tech Arryaan Consulting

DevOps + AWS + Kubernetes + GenAI + AIOps + MLOps Course Content

12-Week Training Syllabus:

Weekly Breakdown:

Week	Focus Area	Topics Covered
Week 1	DevOps Basics	- Git & GitHub fundamentals- GitOps principles- GitHub Actions pipelines
Week 2	IaC & Config Management	- Terraform (for AWS infrastructure)- Ansible for configuration automation
Week 3	AWS Core DevOps	- EC2, IAM, VPC setup- S3 for storage- Lambda functions- CloudWatch for logging- CodePipeline for automation
Week 4	Docker + Kubernetes	- Dockerfile creation- Pods, Services, Deployments- Kubernetes YAML configuration
Week 5	EKS with Terraform	- EKS cluster provisioning with Terraform- Worker node groups- IAM roles- Helm basics
Week 6	CI/CD to EKS	- Integrate GitHub Actions with Helm- Deploy apps to EKS using CI/CD pipelines
Week 7	AIOps with AWS-native Tools	- CloudWatch Anomaly Detection- DevOps Guru insights- Lambda-based incident response
Week 8	GenAI for DevOps Automation	- GitHub Copilot for YAML/Terraform/code generation- Amazon Q Developer for AI-guided automation- Auto-generate IaC and pipeline configs

Week	Focus Area	Topics Covered
Week 9	MLOps Foundations	- ML lifecycle overview- MLflow for tracking- Dockerizing ML models- DVC for dataset and model versioning
Week 10	MLOps with SageMaker	- Training models on SageMaker- Deploying endpoints- Model performance tracking
Week 11	Auto-Healing & Monitoring	- Prometheus + AlertManager- CloudWatch Alarms- Lambda for auto-remediation of K8s pod failures
Week 12	Capstone Project	- End-to-end project integrating DevOps, AIOps, and MLOps components

Capstone Project Options:

Project Title	Description
E2E ML Deployment via CI/CD	Full pipeline: Train → version → deploy ML model using GitHub Actions & AWS SageMaker
GenAI DevOps Assistant	Use GitHub Copilot or Amazon Q to auto-generate Terraform + CI/CD YAML configs
Auto-Healing EKS Infrastructure	Prometheus + CloudWatch alerts trigger Lambda for automatic Kubernetes pod recovery
Observability + AI	Build real-time dashboards + anomaly detection using CloudWatch and Python scripts

Tooling Overview:

Category	Tools Used
DevOps	Git, GitHub Actions, Terraform, Ansible
Cloud	AWS EC2, EKS, IAM, VPC, S3, CloudWatch, CodePipeline, Lambda
Kubernetes	Helm, Karpenter, kubectl
AI/GenAI	GitHub Copilot, Amazon Q Developer
AIOps	AWS DevOps Guru, CloudWatch Anomaly Detection
MLOps	MLflow, SageMaker, DVC, Docker