Cloud Infrastructure & DevOps Crew Roadmap
Phase 1: Foundations & Version Control (Weeks 1-4)

Week	Focus Area	Key Concepts	Recommended Resources (Free/Low-Cost)	Project / Practice Goal
1	**DevOps Culture & Linux Basics**	Principles of DevOps, Agile Integration, **Linux/Bash Shell** commands, File system navigation, Basic **SSH**.	**Linux Survival** (online interactive), **freeCodeCamp** Bash course, **DevOps Handbook** (Conceptual).	Set up a Linux VM (Virtual Machine) and complete 15 basic shell scripting exercises.
2	**Networking & Monitoring**	Basic networking (TCP/IP, HTTP, Ports), DNS, Load Balancing (conceptual), Introduction to basic monitoring tools.	Tutorials on **OSI Model**, Articles on **Prometheus/Grafana** (conceptual), **Ping/Traceroute** commands.	Configure a firewall (e.g., ufw) on your VM; understand basic HTTP request flow.
3	**Git Mastery**	Advanced Git (Rebase, Stash, Reset), Branching strategies (**GitFlow/Trunk-Based Development**), Conflict Resolution.	**Atlassian Git Tutorial**, **Git Immersion** (Interactive), Practice Git on a **GitHub** repository.	Collaborate on a team repository (or simulate one) and practice rebase/merge conflict resolution.

4	**Cloud Fundamentals (AWS/Azure/GCP)**	Cloud concepts (IaaS, PaaS, SaaS), Regions/AZs, **AWS EC2** (Virtual Servers), Security Groups, IAM basics.	**AWS Free Tier** account setup, **AWS Certified Cloud Practitioner** (Intro modules).	Launch a basic EC2 instance, SSH into it, and install a simple web server (e.g., Nginx).

Phase 2: Automation & Orchestration (Weeks 5-9)

Week	Focus Area	Key Concepts	Recommended Resources (Free/Low-Cost)	Project / Practice Goal
5	**Containers (Docker)**	**Docker** fundamentals, Containers vs. VMs, Dockerfile syntax, Creating Docker Images, Docker Compose.	**Docker Documentation/Tutorials**, **freeCodeCamp** Docker course.	Containerize a simple Python/Node web application using a multi-stage Dockerfile.
6	**Orchestration (Kubernetes Intro)**	**Kubernetes** concepts (Pods, Nodes, Deployments, Services), Minikube setup (local), YAML manifests.	**Kubernetes Official Docs** (Concepts), **KodeKloud** (Intro to Kubernetes).	Deploy a simple containerized application onto a local **Minikube** cluster.

7	**Configuration Management (Ansible)**	**Ansible** basics, YAML playbooks, Inventory management, Idempotence principle, Secrets handling.	**Ansible Documentation** (Intro), Tutorials on automating software installation via Ansible.	Write an Ansible playbook to automatically configure your EC2 instance.
8	**Infrastructure as Code (Terraform)**	**Terraform** fundamentals, HCL syntax, State management, Providers (AWS setup), Provisioning resources.	**HashiCorp Learn** (Terraform Intro), Tutorials on provisioning an EC2 instance using Terraform.	Write Terraform code to manage your cloud infrastructure (VPC, Security Group, EC2).
9	**Basic CI/CD Pipeline**	CI/CD concepts, Introduction to **GitHub Actions/Jenkins/GitLab CI**, Testing integration, Staging vs. Production environments.	Tutorials for **GitHub Actions** for simple build/test pipeline.	Create a basic **CI pipeline** that automatically runs tests when code is pushed to a repository.

Phase 3: Advanced CI/CD & MLOps Concepts (Weeks 10-14)

Week	Focus Area	Key Concepts	Recommended Resources (Free/Low-Cost)	Project / Practice Goal

10	Advanced CI/CD & Deployment	Artifact management, Blue/Green Deployment, Canary Releases, Rollback strategies.	Articles on advanced deployment patterns, **Jenkins** pipeline tutorials.	Extend your CI pipeline to include **automated deployment** to a staging environment.
11	Monitoring & Alerting	Metrics (Latency, Error rates), Logging (ELK Stack conceptual), **Prometheus/Grafana** setup and dashboard creation.	Tutorials on setting up basic monitoring with **Prometheus/Grafana**.	Set up monitoring for your deployed web server and configure basic alerts.
12	Security (DevSecOps)	Security automation, Secrets Management (**HashiCorp Vault** conceptual), Static/Dynamic Application Security Testing (**SAST/DAST** conceptual).	Tutorials on integrating basic security checks into the CI pipeline.	Integrate a simple **static code analysis tool** into your CI pipeline.
13	Cloud Services Deep Dive	Serverless computing (**AWS Lambda/Azure Functions**), Managed Databases (RDS/DynamoDB), Cloud Storage (S3).	**AWS Lambda** tutorials, Deep dive into 2-3 specific cloud services.	Implement a simple **serverless function** (e.g., an API endpoint using Lambda/API Gateway).

14	Final Capstone Project	Integrating all elements: Code, Docker, Kubernetes, Terraform, CI/CD, and Monitoring into a single, cohesive project.	**UpStride Mentor** review, Documentation best practices.	**Build and deploy a full-stack application** on Kubernetes managed by Terraform, with an automated CI/CD pipeline.

What's Next? Your Path After 14 Weeks

Career Action	Specific Goal / Outcome	Tools & Resources
Deepen Portfolio	**Advanced Tool Specialization:** Master either a new cloud provider (Azure/GCP) or a specific tool like **GitOps** (**ArgoCD/Flux**) and **Service Mesh** (Istio).	**Azure/GCP Free Tier** courses, Tutorials on **ArgoCD/Istio**.
Certification	Obtain the first professional certification: **AWS Certified Solutions Architect** (Associate) or **Certified Kubernetes Administrator (CKA).**	Dedicated exam prep courses (A Cloud Guru, Stephane Maarek).
Launch Job Search	Focus technical interviews on scenario-based problem-solving related to system failure, scaling, and monitoring.	**UpStride Job Search & Branding Architect Cohort**, **Mock System Design** practice with a DevOps focus.