Cloud Computing and Networking

Course ID: PA4300

🏛 Pextra Academy™

Professional Training in Cloud Computing & Infrastructure Engineering

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Program Overview

This program delivers a **comprehensive, hands-on foundation** in modern cloud computing and networking. It equips students with essential theoretical knowledge, architectural design principles, and practical engineering skills required for success in today's cloud and infrastructure roles.

Participants gain extensive real-world experience working with both **public cloud platforms (AWS)** and the **enterprise-grade private cloud environment (Pextra CloudEnvironment®), developing a deep understanding of how modern distributed systems are architected, deployed, secured, and managed at scale.

Learning Outcomes

Upon successful completion of this program, students will be able to:

- ✔ Build a strong foundation in Linux systems administration through extensive command-line experience
- ✔ Analyze and implement core networking protocols and architectures, including TCP/IP, DNS, and VPCs
- ✔ Compare cloud deployment models (Public, Private, Hybrid) and service models (IaaS, PaaS, SaaS)
- ✔ Design and deploy infrastructure using Infrastructure as Code (IaC) tools
- ✔ Build, manage, and orchestrate virtual machines and containerized environments

- ✔ Architect scalable storage and database solutions in cloud environments
- ✔ Implement identity and access management (IAM), security best practices, and compliance controls
- ✔ Design resilient, high-availability, and fault-tolerant cloud architectures

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Technology Stack

- ⚙ AWS Academy (Cloud Foundations, Architecting on AWS, Learner Labs)
- ⚙ Pextra CloudEnvironment® (Enterprise Private Cloud Platform)
- ⚙ GitHub for version control and DevOps workflows
- ⚙ Linux systems and advanced CLI operations

Curriculum Highlights

The program spans approximately **52 instructional hours** (lecture + guided labs).

Module	Description	Hours
Foundations	Linux systems administration, command-line proficiency, and version control with GitHub	4
Networking	TCP/IP, DNS, OSI model, VPNs, firewalls, and traffic monitoring	6
Cloud Fundamentals	Cloud service & deployment models, IAM, core AWS services	6
Virtualization & Private Cloud	Hypervisors, containers vs. VMs, and enterprise private cloud platforms	6
Infrastructure as Code (IaC)	Automated provisioning with Terraform and AWS CloudFormation	6
Storage & Databases	Cloud-native storage (S3, EBS, EFS) and managed databases (RDS, DynamoDB)	6
Cloud Networking & Security	VPC design, hybrid connectivity, CDN, and cloud security frameworks	6
Managed & Serverless Services	Lambda, analytics, streaming (Kinesis), and monitoring (CloudWatch)	6
Cloud Architecture	Scalable design, microservices, high availability, and disaster recovery	6
Total		**52**

Note: Hours reflect combined lecture, discussion, and guided laboratory time. Self-paced lab extensions and formal assessments are not included.

Textbook & Learning Resources

Required Textbook:

Foundations of Cloud Computing, Virtualization, and Networking
Raja Alomari, PhD
Pextra Academy™

Available on Amazon:
`https://www.amazon.com/dp/B0GF85VKHV`

This authoritative textbook provides a structured reference aligned with the course, covering essential

networking, virtualization, and cloud computing principles.

Assessment Model

Assessment Component	Weight
Assignments	15%
Hands-on Labs (AWS)	15%
Quizzes	15%
Midterm Examination	25%
Final Examination	30%

An optional capstone project is available for additional credit and professional portfolio development.

Suggested Prerequisites

This program is designed to be accessible to motivated learners while maintaining strong technical rigor. Recommended preparation includes:

- Basic familiarity with programming concepts (any language)
- Introductory knowledge of computer systems or IT fundamentals
- General awareness of networking concepts (helpful but not required)
- Comfort working in Linux-based environments
- Strong motivation for hands-on, lab-intensive learning

No prior experience with cloud platforms is required. A genuine interest in cloud infrastructure and distributed systems is strongly recommended.

Program Experience

Students will benefit from:

- Extensive hands-on labs and realistic industry scenarios
- Dual-environment access to public (AWS) and private (Pextra) clouds
- Focused, practical assignments that build immediately applicable skills
- Regular quizzes to reinforce conceptual understanding
- Direct exposure to professional tools and modern DevOps workflows

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Why Choose Pextra Academy™

- Industry-aligned curriculum focused on real-world, job-ready skills
- Strong emphasis on applied engineering and experiential learning
- Unique access to enterprise-grade private cloud infrastructure (Pextra CloudEnvironment®)
- Purpose-built for career readiness in cloud computing and infrastructure engineering roles

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