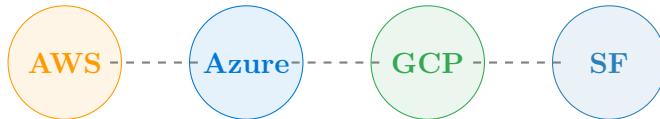


Cloud FinOps

Professional Curriculum

A Comprehensive Training Program for
Cloud Financial Management Excellence



Curriculum Version 1.0

2025 Edition

Program Duration: 16–24 Weeks

Target Audience: Cloud Engineers, Architects, Finance Teams,
FinOps Practitioners

Certification Preparation: FinOps Certified Practitioner
(FOCP)

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Chapter 1

Program Overview

1.1 Executive Summary

Cloud FinOps represents a transformative discipline that brings financial accountability to the variable spend model of cloud computing. This comprehensive curriculum is designed to develop practitioners who can effectively manage, optimize, and govern cloud financial operations across enterprise environments.

This program synthesizes knowledge from the industry's most authoritative texts, including foundational works by J.R. Storment and Mike Fuller, practical implementation guides, and platform-specific optimization strategies. The curriculum follows a progressive learning path from foundational concepts through advanced automation and organizational scaling.

1.2 Program Philosophy

The Cloud FinOps discipline operates at the intersection of technology, finance, and organizational culture. This curriculum embraces three core principles:

1. **Teams must collaborate:** FinOps requires cross-functional alignment between engineering, finance, product, and executive leadership.
2. **Business value drives decisions:** Every cloud spending decision should be evaluated through the lens of business value creation, not merely cost reduction.
3. **Everyone takes ownership:** Cloud cost management is a shared responsibility that requires distributed accountability across the organization.

1.3 Target Audience

This curriculum is designed for multiple stakeholder groups:

Role Category	Description
Cloud Engineers	Practitioners responsible for designing, deploying, and managing cloud infrastructure
DevOps/SRE Teams	Teams managing CI/CD pipelines and operational efficiency
Cloud Architects	Professionals designing enterprise cloud architectures
Finance Teams	Financial analysts and controllers working with cloud budgets
Product Managers	Leaders making cost-aware product decisions
FinOps Practitioners	Dedicated FinOps team members and analysts
IT Leadership	Directors, VPs, and CIOs overseeing cloud strategy

Table 1.1: Target Audience by Role Category

1.4 Prerequisites

Participants should possess the following foundational knowledge:

- Basic understanding of cloud computing concepts (IaaS, PaaS, SaaS)
- Familiarity with at least one major cloud platform (AWS, Azure, or GCP)
- Understanding of fundamental financial concepts (budgets, forecasting, ROI)
- Experience with organizational IT operations or software development
- Basic proficiency with spreadsheets and data analysis tools

1.5 Learning Outcomes

Upon completion of this curriculum, participants will be able to:

Learning Objectives

1. Articulate the FinOps lifecycle (Inform, Optimize, Operate) and apply it to organizational contexts
2. Design and implement comprehensive cloud cost visibility and allocation strategies
3. Execute optimization techniques across compute, storage, networking, and data services
4. Develop forecasting models and anomaly detection systems for cloud spend
5. Build automated cost governance workflows using cloud-native and third-party tools
6. Create organizational frameworks for scaling FinOps practices enterprise-wide
7. Apply platform-specific optimization strategies for AWS, Azure, GCP, and Snowflake
8. Integrate sustainability considerations into cloud financial management

1.6 Core Textbook Library

This curriculum is structured around seven authoritative texts that form the FinOps professional's core bookshelf:

Title	Authors	Focus Area	Level
Cloud FinOps, 2nd Edition	Storment & Fuller	Foundation & Culture	[Intro–Int]
Efficient Cloud FinOps	San Miguel Sánchez & Obando García	Multi-Cloud Implementation	[Intermediate]
AWS FinOps Simplified	Peter Chung	AWS Platform	[Intro–Int]
FinOps Handbook for Microsoft Azure	Maulik Soni	Azure Platform	[Intro–Int]
FinOps for Snowflake	Ravi Kumar et al.	Snowflake Platform	[Intermediate]
Practical FinOps	Mohamed Labouardy	Automation & AI/ML	[Int–Adv]
Scaling Cloud FinOps	Kanumuri & Zeier	Organizational Scaling	[Int–Adv]

Table 1.2: Core Textbook Library with Difficulty Levels

1.7 Program Structure

The curriculum is organized into four progressive phases spanning 16–24 weeks:

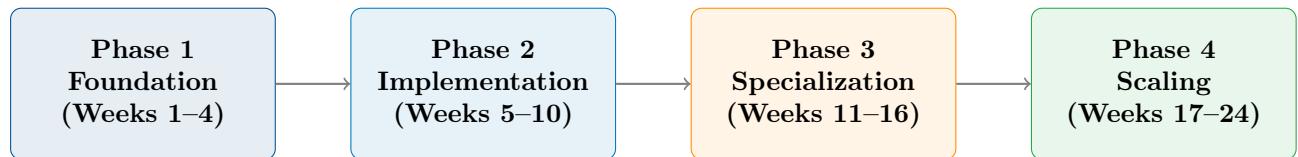


Figure 1.1: Four-Phase Curriculum Structure

Chapter 2

Phase 1: Foundation and Shared Language

Phase Overview

Duration: 4 Weeks

Primary Text: Cloud FinOps, 2nd Edition

Objective: Establish foundational understanding of FinOps principles, lifecycle, and organizational culture

2.1 Module 1.1: Introduction to Cloud FinOps

▷ Week 1

[Introductory]

2.1.1 Learning Objectives

Learning Objectives

Upon completing this module, participants will be able to:

- Define Cloud FinOps and articulate its business value proposition
- Explain the historical evolution from on-premises cost management to cloud financial operations
- Identify the key stakeholders in a FinOps practice and their respective responsibilities
- Describe the relationship between FinOps and other IT frameworks (ITIL, DevOps, Agile)

2.1.2 Topics Covered

What is Cloud FinOps?

Cloud FinOps (Cloud Financial Operations) is an evolving cloud financial management discipline and cultural practice that enables organizations to get maximum business value by helping engineering, finance, technology, and business teams collaborate on data-driven spending decisions.

Key Concepts

Core Definition: FinOps is an operational framework and cultural shift that brings financial accountability to the variable spend model of cloud, enabling distributed teams to make business trade-offs between speed, cost, and quality.

The Variable Spend Model Challenge

Unlike traditional IT procurement with fixed capital expenditures, cloud computing introduces a consumption-based model where costs directly correlate with usage. This shift creates both opportunities and challenges:

- **Opportunities:** Elasticity, pay-per-use efficiency, rapid scaling, reduced upfront investment
- **Challenges:** Cost unpredictability, sprawl, accountability gaps, budget overruns

FinOps Stakeholder Ecosystem

The FinOps practice requires coordination across multiple organizational functions:

Stakeholder	Primary Concerns	FinOps Contribution
Engineering	Performance, reliability, velocity	Cost-aware architecture decisions
Finance	Budget accuracy, forecasting, compliance	Cloud-specific financial analysis
Product	Feature velocity, user experience	Unit economics understanding
Executives	Strategic investment, ROI	Business value alignment
Procurement	Vendor management, contracts	Commitment-based discounts

Table 2.1: FinOps Stakeholder Responsibilities Matrix

2.1.3 Required Reading

Required Reading

Cloud FinOps, 2nd Edition by Storment & Fuller

- Chapter 1: What is Cloud FinOps?
- Chapter 2: Why FinOps?
- Part I Introduction: The Cultural Shift

2.1.4 Hands-On Lab 1.1

Hands-On Lab

Lab: Cloud Spend Discovery Assessment

Objective: Conduct an initial assessment of your organization's current cloud spend visibility and governance maturity.

Activities:

1. Access your organization's cloud billing console (AWS Cost Explorer, Azure Cost Management, or GCP Billing)
2. Document the current monthly cloud spend across all accounts/subscriptions

3. Identify the top 10 cost-driving services
 4. Assess current tagging coverage and consistency
 5. Complete the FinOps Maturity Assessment questionnaire
- Deliverable:** Cloud Spend Discovery Report (2–3 pages)

2.2 Module 1.2: The FinOps Lifecycle

▷ Week 2

[Introductory]

2.2.1 Learning Objectives

Learning Objectives

Upon completing this module, participants will be able to:

- Explain the three phases of the FinOps lifecycle: Inform, Optimize, Operate
- Describe the iterative nature of FinOps practice maturation
- Map organizational activities to appropriate lifecycle phases
- Assess current organizational positioning within the lifecycle framework

2.2.2 Topics Covered

The Inform Phase

The Inform phase establishes visibility and accountability for cloud costs. This phase focuses on:

- **Cost Allocation:** Tagging strategies, account structures, and chargeback/showback models
- **Visibility:** Dashboards, reports, and real-time cost monitoring
- **Benchmarking:** Internal and external cost comparisons
- **Forecasting:** Predictive models for future spend

The Optimize Phase

The Optimize phase focuses on reducing waste and maximizing the value of cloud investments:

- **Rightsizing:** Matching resource capacity to actual workload requirements
- **Rate Optimization:** Reserved Instances, Savings Plans, Committed Use Discounts
- **Architectural Optimization:** Serverless, containerization, spot/preemptible instances
- **Waste Elimination:** Identifying and removing unused or orphaned resources

The Operate Phase

The Operate phase establishes ongoing governance and continuous improvement:

- **Governance:** Policies, guardrails, and approval workflows
- **Automation:** Scheduled actions, auto-scaling, policy enforcement
- **Continuous Improvement:** Regular optimization reviews and process refinement
- **Organizational Alignment:** Cross-functional collaboration and communication

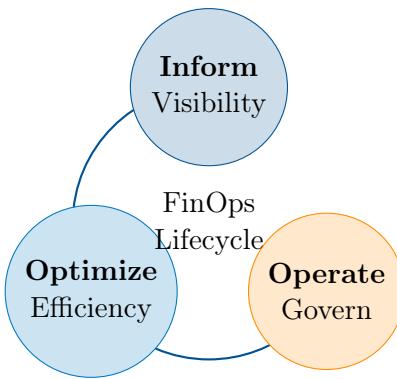


Figure 2.1: The FinOps Lifecycle: Inform, Optimize, Operate

2.2.3 Required Reading

Required Reading

Cloud FinOps, 2nd Edition by Storment & Fuller

- Chapter 3: The FinOps Lifecycle
- Chapter 4: Inform Phase Deep Dive
- Chapter 5: Optimize Phase Deep Dive
- Chapter 6: Operate Phase Deep Dive

2.2.4 Hands-On Lab 1.2

Hands-On Lab

Lab: Lifecycle Phase Mapping Exercise

Objective: Map your organization's current FinOps activities to the lifecycle framework and identify gaps.

Activities:

1. Create a three-column matrix with Inform, Optimize, and Operate headers
2. List all current cost management activities in your organization
3. Categorize each activity into the appropriate lifecycle phase
4. Identify phases with limited or no activities (gaps)
5. Propose three high-impact activities for each gap area

Deliverable: Lifecycle Gap Analysis with Recommendations

2.3 Module 1.3: Anatomy of Cloud Bills

▷ Week 3

[Intermediate]

2.3.1 Learning Objectives

Learning Objectives

Upon completing this module, participants will be able to:

- Interpret cloud billing structures across AWS, Azure, and GCP
- Identify key billing dimensions: services, regions, usage types, pricing models
- Understand commitment-based discount mechanisms (RIs, Savings Plans, CUDs)
- Recognize common billing anomalies and their root causes

2.3.2 Topics Covered

Cloud Pricing Model Fundamentals

Cloud providers employ complex, multi-dimensional pricing models. Understanding these models is essential for effective cost management:

Dimension	AWS	Azure	GCP
On-Demand	Pay-as-you-go	Pay-as-you-go	On-demand
Committed	Reserved Instances, Savings Plans	Reserved Instances, Reserved Capacity	Committed Use Discounts
Spot/Preemptible	Spot Instances	Spot VMs	Preemptible VMs, Spot VMs
Free Tier	12-month + always free	12-month + always free	Always free + trial credits

Table 2.2: Pricing Model Comparison Across Major Cloud Providers

Bill Anatomy: Key Components

- **Account/Subscription Structure:** Hierarchical organization affecting consolidated billing
- **Service Categories:** Compute, storage, networking, database, analytics, AI/ML
- **Usage Types:** Instance hours, data transfer, storage GB-months, API calls
- **Pricing Tiers:** Volume-based discounts, tiered pricing models
- **Tax and Support:** Regional taxes, support plan charges

Commitment-Based Discounts Deep Dive

Important Note

Commitment-based discounts represent the most significant opportunity for cost optimization, often yielding 30–72% savings compared to on-demand pricing. However, over-commitment creates waste, making accurate capacity planning essential.

AWS Reserved Instances and Savings Plans:

- Standard RIs: Up to 72% discount, specific instance type and region
- Convertible RIs: Up to 66% discount, flexibility to change instance families
- Compute Savings Plans: Up to 66% discount, applies to EC2, Lambda, Fargate

- EC2 Instance Savings Plans: Up to 72% discount, specific instance family and region

Azure Reserved Instances and Capacity:

- Reserved VM Instances: 1-year or 3-year terms, up to 72% savings
- Azure Hybrid Benefit: Leverage existing Windows Server and SQL licenses
- Reserved Capacity: Available for Cosmos DB, SQL Database, Blob Storage

GCP Committed Use Discounts:

- Committed Use Contracts: 1-year or 3-year, up to 57% discount
- Sustained Use Discounts: Automatic, no commitment required, up to 30%
- Flexible Committed Use: Apply across machine families

2.3.3 Required Reading

Required Reading

Cloud FinOps, 2nd Edition by Storment & Fuller

- Chapter 7: The Anatomy of the Cloud Bill
- Chapter 8: Understanding Pricing Models

Efficient Cloud FinOps by San Miguel Sánchez & Obando García

- Chapter 2: Cloud Cost Fundamentals (AWS, Azure, GCP sections)

2.3.4 Hands-On Lab 1.3

Hands-On Lab

Lab: Bill Anatomy Deep Dive

Objective: Analyze a real cloud bill to understand cost drivers and identify optimization opportunities.

Activities:

1. Export detailed billing data (AWS Cost and Usage Report, Azure Cost Export, or GCP Billing Export)
2. Load data into a spreadsheet or BI tool
3. Create pivot tables/charts showing:
 - Top 10 services by cost
 - Cost distribution by region
 - On-demand vs. committed spend ratio
 - Month-over-month cost trends
4. Identify the top 5 cost optimization opportunities

Deliverable: Bill Analysis Report with Visualization Dashboard

2.4 Module 1.4: Building a FinOps Culture

▷ Week 4

[Intermediate]

2.4.1 Learning Objectives

Learning Objectives

Upon completing this module, participants will be able to:

- Design organizational structures that support FinOps practice
- Develop strategies for gaining executive sponsorship and organizational buy-in
- Create effective communication frameworks for cross-functional collaboration
- Establish metrics and KPIs that drive desired financial behaviors

2.4.2 Topics Covered

FinOps Organizational Models

Organizations implement FinOps through various structural approaches:

Model	Description	Best For
Centralized	Dedicated FinOps team manages all cloud cost activities	Large enterprises, early FinOps adoption
Federated	Distributed FinOps champions with central coordination	Multi-BU organizations, mature practices
Hybrid	Central team for strategy, embedded practitioners for execution	Most organizations, scalable approach

Table 2.3: FinOps Organizational Structure Models

The FinOps Team Composition

A mature FinOps practice requires diverse skill sets:

- **FinOps Lead/Manager:** Strategic direction, stakeholder management, executive communication
- **Cloud Analysts:** Data analysis, reporting, cost modeling
- **Cloud Engineers:** Technical optimization, automation, tooling
- **Business Partners:** Finance liaison, budget management, forecasting

FinOps Principles and Cultural Tenets

The FinOps Foundation defines six core principles:

1. **Teams need to collaborate:** FinOps requires partnership across engineering, finance, product, and executives
2. **Everyone takes ownership:** Distributed accountability for cloud spend
3. **A centralized team drives FinOps:** Center of Excellence enables and governs practice
4. **Reports should be accessible and timely:** Real-time visibility enables real-time decisions
5. **Decisions are driven by business value:** Unit economics over raw cost metrics
6. **Take advantage of the variable cost model:** Embrace cloud flexibility as a strategic advantage

FinOps Maturity Model

Organizations progress through maturity levels:

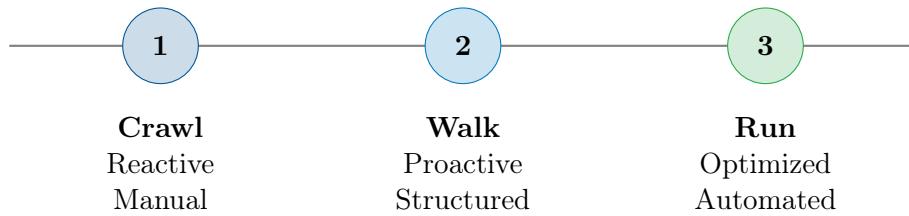


Figure 2.2: FinOps Maturity Model: Crawl, Walk, Run

2.4.3 Required Reading

Required Reading

Cloud FinOps, 2nd Edition by Storment & Fuller

- Chapter 9: Building the FinOps Team
- Chapter 10: FinOps Culture and Organizational Change
- Chapter 11: FinOps Maturity Model

2.4.4 Phase 1 Assessment

Phase 1 Capstone Project: FinOps Foundation Proposal

Objective: Develop a comprehensive proposal for establishing or enhancing a FinOps practice in your organization.

Requirements:

1. Executive summary articulating the business case for FinOps
2. Current state assessment including maturity evaluation
3. Proposed organizational structure and team composition
4. Implementation roadmap with milestones and success metrics
5. Quick-win identification for first 90 days

Format: 10–15 page proposal with executive presentation deck

Evaluation Criteria: Business case clarity, technical accuracy, organizational feasibility, actionability

Chapter 3

Phase 2: Platform Implementation

Phase Overview

Duration: 6 Weeks

Primary Texts: Platform-specific guides

Objective: Implement FinOps practices on primary cloud platforms with hands-on tool proficiency

3.1 Module 2.1: AWS FinOps Implementation

▷ Weeks 5–6

[Intermediate]

3.1.1 Learning Objectives

Learning Objectives

Upon completing this module, participants will be able to:

- Design AWS account structures optimized for cost management
- Implement comprehensive tagging strategies using AWS Tag Editor and Resource Groups
- Configure AWS Cost Explorer, Budgets, and Cost Anomaly Detection
- Analyze and recommend Reserved Instance and Savings Plan purchases
- Execute rightsizing using AWS Compute Optimizer
- Build custom cost allocation reports using Cost and Usage Reports (CUR)

3.1.2 Topics Covered

AWS Account Structure for FinOps

- **AWS Organizations:** Multi-account strategy with consolidated billing
- **Organizational Units (OUs):** Hierarchical grouping by environment, business unit, or function
- **Service Control Policies (SCPs):** Guardrails for cost governance
- **Cost Allocation Tags:** User-defined and AWS-generated tags for granular tracking

AWS Cost Management Tools

Tool	Purpose
Cost Explorer	Interactive cost visualization and analysis
AWS Budgets	Threshold-based alerts and automated actions
Cost Anomaly Detection	ML-powered spend anomaly identification
Cost and Usage Report (CUR)	Detailed, granular billing data export
Compute Optimizer	Rightsizing recommendations for EC2, EBS, Lambda
Trusted Advisor	Best practice recommendations including cost optimization
Savings Plans	Flexible commitment-based discount management

Table 3.1: AWS Cost Management Tool Suite

AWS Cost Optimization Techniques

Compute Optimization:

- EC2 rightsizing based on CloudWatch metrics and Compute Optimizer
- Spot Instance integration for fault-tolerant workloads
- Graviton (ARM) migration for improved price-performance
- Auto Scaling optimization for demand-based scaling

Storage Optimization:

- S3 Intelligent-Tiering for automatic access-based placement
- EBS volume rightsizing and GP3 migration
- Lifecycle policies for data archival

Data Transfer Optimization:

- VPC endpoint implementation to reduce NAT Gateway costs
- CloudFront caching to minimize origin data transfer
- Regional data locality strategies

3.1.3 Required Reading

Required Reading

AWS FinOps Simplified by Peter Chung

- Chapter 1–3: AWS FinOps Foundations
- Chapter 4–6: Cost Visibility and Allocation on AWS
- Chapter 7–9: AWS Cost Optimization Strategies
- Chapter 10–12: Reserved Instances and Savings Plans

Efficient Cloud FinOps by San Miguel Sánchez & Obando García

- AWS-specific sections throughout

3.1.4 Hands-On Labs

Hands-On Lab

Lab 2.1a: AWS Cost Visibility Setup

Activities:

1. Configure Cost and Usage Report with Athena integration
2. Create custom Cost Explorer saved reports
3. Set up AWS Budgets with action thresholds
4. Enable and tune Cost Anomaly Detection monitors
5. Implement a tagging compliance dashboard

Hands-On Lab

Lab 2.1b: AWS Cost Optimization Execution

Activities:

1. Run Compute Optimizer analysis and implement top 5 recommendations
2. Analyze EC2 utilization and execute rightsizing
3. Evaluate Savings Plan coverage and model purchase scenarios
4. Identify and terminate unused resources (EBS, EIPs, snapshots)
5. Implement S3 lifecycle policies for cost optimization

3.2 Module 2.2: Azure FinOps Implementation

▷ Weeks 7–8

[Intermediate]

3.2.1 Learning Objectives

Learning Objectives

Upon completing this module, participants will be able to:

- Design Azure subscription and management group hierarchies for cost governance
- Implement Azure tagging strategies with Azure Policy enforcement
- Configure Azure Cost Management + Billing for visibility and alerting
- Leverage Azure Advisor for optimization recommendations
- Analyze Reserved Instance opportunities using Azure portal and APIs
- Implement Azure Hybrid Benefit for Windows and SQL workloads

3.2.2 Topics Covered

Azure Resource Hierarchy

- **Management Groups:** Root-level hierarchy for policy inheritance
- **Subscriptions:** Billing and access control boundary
- **Resource Groups:** Logical containers for related resources
- **Tags:** Metadata for cost allocation and governance

Azure Cost Management + Billing

Capability	Description
Cost Analysis	Multi-dimensional cost exploration with custom views
Budgets	Threshold-based alerts with automated actions
Exports	Scheduled cost data exports to storage accounts
Recommendations	Azure Advisor integration for optimization suggestions
Power BI Integration	Advanced visualization and reporting

Table 3.2: Azure Cost Management Capabilities

Azure-Specific Optimization Strategies

Azure Hybrid Benefit:

- Bring existing Windows Server licenses to Azure (up to 85% savings)
- SQL Server license mobility for Azure SQL
- Linux Hybrid Benefit for RHEL and SUSE subscriptions

Azure Reserved Instances:

- Virtual Machines: 1-year and 3-year terms
- Azure SQL Database and Managed Instance
- Cosmos DB reserved capacity
- Azure Synapse Analytics and Databricks

3.2.3 Required Reading

Required Reading

FinOps Handbook for Microsoft Azure by Maulik Soni

- Complete book coverage (all chapters)

Efficient Cloud FinOps by San Miguel Sánchez & Obando García

- Azure-specific sections throughout

3.2.4 Hands-On Labs

Hands-On Lab

Lab 2.2: Azure Cost Management Implementation

Activities:

1. Configure Azure Cost Management with custom scopes and views
2. Create budgets with email and Action Group alerts
3. Implement Azure Policy for tag enforcement
4. Generate Reserved Instance recommendations and model savings
5. Configure scheduled exports to storage account with Power BI integration

3.3 Module 2.3: Multi-Cloud FinOps Strategies

▷ Weeks 9–10

[Intermediate]

3.3.1 Learning Objectives

Learning Objectives

Upon completing this module, participants will be able to:

- Design unified tagging taxonomies across AWS, Azure, and GCP
- Implement normalized cost reporting for multi-cloud environments
- Evaluate and select third-party FinOps tools for multi-cloud visibility
- Develop cloud-agnostic cost optimization frameworks
- Create cross-cloud chargeback and showback models

3.3.2 Topics Covered

Multi-Cloud Tagging Strategy

Consistent tagging across clouds enables unified cost allocation:

Tag Category	AWS	Azure	GCP
Cost Center	CostCenter	costCenter	cost_center
Environment	Environment	environment	env
Application	Application	application	app
Owner	Owner	owner	owner
Project	Project	project	project

Table 3.3: Sample Multi-Cloud Tagging Taxonomy

Third-Party FinOps Tools

- **Apptio Cloudability:** Enterprise-grade multi-cloud cost management
- **CloudHealth by VMware:** Multi-cloud visibility and governance
- **Spot by NetApp:** Optimization automation and container cost management
- **Kubecost:** Kubernetes-specific cost allocation and optimization
- **Vantage:** Developer-focused cloud cost intelligence
- **Infracost:** Infrastructure-as-code cost estimation

GCP FinOps Fundamentals

While this curriculum emphasizes AWS and Azure, GCP fundamentals include:

- **Organization and Folder Hierarchy:** Resource organization for governance
- **Labels:** GCP equivalent of tags for cost allocation
- **Cloud Billing:** Budget alerts, exports, and BigQuery integration
- **Committed Use Discounts:** Flexible and resource-based commitments
- **Recommender:** ML-powered optimization recommendations

3.3.3 Required Reading

Required Reading

Efficient Cloud FinOps by San Miguel Sánchez & Obando García

- Chapter 4–6: Multi-Cloud Cost Management
- Chapter 7–9: Unified Reporting and Dashboards
- Chapter 10–12: Optimization Across Clouds

3.3.4 Phase 2 Assessment

Phase 2 Capstone Project: Platform Implementation Portfolio

Objective: Demonstrate proficiency in implementing FinOps on your primary cloud platform(s).

Requirements:

1. Complete documentation of implemented cost visibility solution
2. Before/after cost analysis showing optimization impact
3. Tagging compliance report with governance policy documentation
4. Reserved Instance/Savings Plan purchase recommendation with ROI analysis
5. Dashboard screenshots and configuration documentation

Format: Technical portfolio with evidence of implementation

Evaluation Criteria: Implementation completeness, measurable savings, documentation quality

Chapter 4

Phase 3: Specialization and Depth

Phase Overview

Duration: 6 Weeks

Primary Texts: FinOps for Snowflake, Practical FinOps

Objective: Develop specialized expertise in platform-specific optimization and automation

4.1 Module 3.1: Snowflake FinOps

▷ Weeks 11–12

[Intermediate]

4.1.1 Learning Objectives

Learning Objectives

Upon completing this module, participants will be able to:

- Explain Snowflake's unique pricing model (compute credits, storage, data transfer)
- Implement visibility into Snowflake cost drivers using ACCOUNT_USAGE views
- Optimize warehouse configurations for cost-performance balance
- Design governance policies for Snowflake resource usage
- Apply FinOps practices to Snowflake Cortex and AI/ML workloads

4.1.2 Topics Covered

Snowflake Pricing Model Deep Dive

Snowflake's pricing differs fundamentally from IaaS providers:

Component	Pricing Basis	Optimization Focus
Compute	Credits per second (warehouse runtime)	Warehouse sizing, suspension, clustering
Storage	TB per month (compressed)	Data lifecycle, cloning, zero-copy
Data Transfer	Per GB egress	Regional placement, caching
Cloud Services	Credits (>10% of compute)	Query optimization, metadata
Serverless	Credits per execution	Task efficiency

Table 4.1: Snowflake Pricing Components

Snowflake Cost Visibility

- **ACCOUNT_USAGE Schema:** Historical usage views (WAREHOUSE_METERING_HISTORY, QUERY_HISTORY)
- **ORGANIZATION_USAGE Schema:** Cross-account visibility for enterprise deployments
- **Resource Monitors:** Budget thresholds with suspend/notify actions
- **Tagging and Labels:** Object-level metadata for cost allocation

Snowflake Optimization Strategies

Warehouse Optimization:

- Right-size warehouses based on query complexity patterns
- Configure auto-suspend (30 seconds to 10 minutes based on workload)
- Implement multi-cluster warehouses for concurrency scaling
- Separate warehouses by workload type (ETL, BI, ad-hoc)

Query Optimization:

- Leverage result caching and data caching
- Optimize clustering keys for large tables
- Use materialized views for frequently accessed aggregations
- Implement query profiling and optimization reviews

4.1.3 Required Reading

Required Reading

FinOps for Snowflake by Ravi Kumar, Natarajan, & Bhardwaj

- Complete book coverage (all chapters)
- Special focus on Snowflake Cortex and AI/ML cost management (newest content)

4.1.4 Hands-On Lab

Hands-On Lab

Lab 3.1: Snowflake Cost Optimization

Activities:

1. Create a Snowflake cost visibility dashboard using ACCOUNT_USAGE views
2. Implement Resource Monitors for budget controls
3. Analyze warehouse utilization and implement rightsizing
4. Configure auto-suspend and auto-resume policies
5. Identify and optimize top 10 most expensive queries

4.2 Module 3.2: FinOps Automation Fundamentals

▷ Weeks 13–14

[Intermediate–Advanced]

4.2.1 Learning Objectives

Learning Objectives

Upon completing this module, participants will be able to:

- Design automated cost optimization workflows using cloud-native tools
- Implement SQL-driven cost analysis and reporting pipelines
- Build automated anomaly detection and alerting systems
- Create Infrastructure-as-Code templates with cost guardrails
- Develop automated remediation playbooks for common cost issues

4.2.2 Topics Covered

Automation Patterns in FinOps

Pattern	Description	Example Implementation
Scheduled Analysis	Regular cost reporting and optimization scans	Lambda/Functions with CloudWatch/Timer triggers
Event-Driven Response	React to cost anomalies or threshold breaches	SNS/Event Grid triggers with remediation functions
Policy Enforcement	Prevent non-compliant resource creation	AWS SCPs, Azure Policy, OPA/Gatekeeper
Self-Healing	Automatic remediation of identified issues	Auto-tagging, unused resource cleanup

Table 4.2: FinOps Automation Patterns

SQL-Driven Cost Analysis

Leveraging billing data exports (AWS CUR, Azure Exports, GCP BigQuery) for advanced analysis:

- Athena/BigQuery/Synapse queries for granular cost exploration
- Trend analysis and forecasting using SQL window functions

- Anomaly detection using statistical methods in SQL
- Custom allocation and chargeback calculations

Infrastructure-as-Code Cost Integration

- **Infracost:** Pre-commit cost estimation for Terraform
- **AWS CloudFormation Guard:** Policy-as-code for cost controls
- **Azure Policy:** Deny policies for expensive resources
- **OPA/Conftest:** Universal policy engine for IaC validation

4.2.3 Required Reading

Required Reading

Practical FinOps by Mohamed Labouardy

- Part I: Visibility and Accountability Automation
- Part II: Multi-Cloud Workflows
- Chapter X: SQL Queries for Cost Analysis (with sample queries)

4.2.4 Hands-On Lab

Hands-On Lab

Lab 3.2: Automated Cost Optimization Pipeline

Activities:

1. Set up Athena/BigQuery integration with billing data
2. Write SQL queries for common cost analysis patterns
3. Build a serverless function for unused resource detection
4. Implement automated tagging compliance remediation
5. Create a cost estimation pipeline for IaC deployments

4.3 Module 3.3: AI/ML for FinOps

▷ Weeks 15–16

[Advanced]

4.3.1 Learning Objectives

Learning Objectives

Upon completing this module, participants will be able to:

- Apply machine learning techniques for cost forecasting
- Implement AI-powered anomaly detection systems
- Use LLMs for automated optimization recommendations
- Evaluate AI/ML FinOps tools and their appropriate use cases
- Design feedback loops for continuous learning optimization

4.3.2 Topics Covered

ML-Powered Cost Forecasting

- Time series forecasting: ARIMA, Prophet, DeepAR
- Feature engineering from billing and usage data
- Model training and validation strategies
- Forecast accuracy metrics and continuous improvement

AI-Driven Anomaly Detection

- Statistical methods: Z-score, IQR, moving averages
- Machine learning: Isolation Forest, Autoencoders
- Cloud-native solutions: AWS Cost Anomaly Detection, Azure Anomaly Detector
- Alert tuning to balance sensitivity and noise

LLMs for FinOps Automation

- Natural language interfaces for cost queries
- Automated report generation and summarization
- Recommendation explanation and contextualization
- Conversational FinOps assistants

4.3.3 Required Reading

Required Reading

Practical FinOps by Mohamed Labouardy

- Part III: AI and LLM Integration for Cost Optimization
- Chapter Y: Building AI-Powered FinOps Workflows

4.3.4 Phase 3 Assessment

Phase 3 Capstone Project: Automation Implementation

Objective: Design and implement an automated FinOps workflow.

Options (choose one):

1. **Cost Optimization Bot:** Automated detection and remediation of common waste patterns
2. **Forecasting System:** ML-powered cost forecasting with accuracy validation
3. **Snowflake Governance:** Automated warehouse management and query optimization
4. **IaC Cost Pipeline:** Pre-deployment cost estimation with policy enforcement

Deliverables: Working implementation, documentation, demo recording

Evaluation Criteria: Technical implementation, automation coverage, business impact potential

Chapter 5

Phase 4: Organizational Scaling

Phase Overview

Duration: 4–8 Weeks

Primary Text: Scaling Cloud FinOps

Objective: Develop capabilities to scale FinOps practices across enterprise organizations

5.1 Module 4.1: FinOps Organizational Design

▷ Weeks 17–18

[Advanced]

5.1.1 Learning Objectives

Learning Objectives

Upon completing this module, participants will be able to:

- Design FinOps organizational structures for different enterprise contexts
- Develop executive communication strategies for FinOps initiatives
- Create governance frameworks that balance agility with cost control
- Build stakeholder engagement programs for cross-functional adoption
- Measure and communicate FinOps program ROI

5.1.2 Topics Covered

Enterprise FinOps Organizational Models

Model	Characteristics
Cloud Center of Excellence (CCoE)	Centralized governance, distributed execution, strong policy framework
Federated FinOps	BU-level FinOps teams with central coordination and standards
Platform Engineering	FinOps embedded in internal platform team offerings
Finance-Led	Strong finance leadership with engineering partnerships

Table 5.1: Enterprise FinOps Organizational Models

The Piggy-Bank Framework

From *Scaling Cloud FinOps*, the Piggy-Bank framework provides a structured approach to cost governance:

- Policies: Define cost-related policies and standards
- Incentives: Align organizational incentives with cost efficiency
- Governance: Establish review and approval processes
- Guardrails: Implement preventive controls
- Yield: Measure and optimize returns on cloud investment

Executive Sponsorship and Communication

- Building the business case for FinOps investment
- Executive dashboard design and KPI selection
- Board-level reporting frameworks
- Crisis communication during cost overruns

5.1.3 Required Reading

Required Reading

Scaling Cloud FinOps by Kanumuri & Zeier

- Part I: FinOps Organizational Design
- Part II: The Piggy-Bank Framework
- Chapter X: Executive Engagement and Communication

Cloud FinOps, 2nd Edition by Storment & Fuller

- Chapter 12: Connecting FinOps to Other Frameworks
- Chapter 13: Sustainability and FinOps

5.2 Module 4.2: FinOps Maturity and Continuous Improvement

▷ Weeks 19–20

[Advanced]

5.2.1 Learning Objectives

Learning Objectives

Upon completing this module, participants will be able to:

- Assess organizational FinOps maturity using the FinOps Foundation framework
- Design maturity advancement roadmaps with measurable milestones
- Implement continuous improvement processes for FinOps practices
- Develop training and enablement programs for organizational adoption
- Create community of practice structures for knowledge sharing

5.2.2 Topics Covered

FinOps Maturity Assessment

The FinOps Foundation defines maturity across multiple capability domains:

1. **Understanding Cloud Usage and Cost:** Cost allocation, visibility, reporting
2. **Performance Tracking and Benchmarking:** KPIs, unit economics, trend analysis
3. **Real-Time Decision Making:** Anomaly detection, alerts, rapid response
4. **Cloud Rate Optimization:** Commitments, spot usage, pricing optimization
5. **Cloud Usage Optimization:** Rightsizing, architectural efficiency
6. **Organizational Alignment:** Governance, accountability, culture

Maturity Advancement Strategies

Level	Characteristics	Advancement Focus
Crawl	Reactive, manual, limited visibility	Establish basic visibility and reporting
Walk	Proactive, structured processes, growing automation	Expand coverage, standardize practices
Run	Optimized, automated, cultural integration	Continuous improvement, innovation

Table 5.2: Maturity Level Progression Strategies

Training and Enablement Programs

- Role-based training curriculum design
- Self-service learning resources and documentation
- Certification pathways (FinOps Certified Practitioner, FinOps Certified Professional)
- Gamification and incentive programs

5.2.3 Required Reading

Required Reading

Scaling Cloud FinOps by Kanumuri & Zeier

- Part III: Maturity Models and Assessment
- Part IV: Organizational Adoption Patterns

5.3 Module 4.3: Advanced Governance and Sustainability

▷ Weeks 21–24

[Advanced]

5.3.1 Learning Objectives

Learning Objectives

Upon completing this module, participants will be able to:

- Design comprehensive cloud governance frameworks
- Integrate sustainability metrics into FinOps practices (GreenOps)
- Implement multi-cloud governance strategies
- Develop compliance and audit frameworks for cloud financial management
- Create vendor management strategies for cloud cost optimization

5.3.2 Topics Covered

Comprehensive Cloud Governance

- Policy framework design (preventive, detective, responsive)
- Approval workflows and exception management
- Compliance monitoring and reporting
- Risk management integration

GreenOps: Sustainability in FinOps

- Carbon footprint visibility (AWS Carbon Footprint, Azure Carbon Dashboard)
- Sustainability-aware optimization decisions
- Renewable energy region selection
- Efficiency metrics (carbon per transaction, energy per compute hour)

Vendor and Contract Management

- Enterprise Discount Program (EDP) negotiation strategies
- Multi-cloud vendor management
- License optimization and compliance
- Partner and reseller relationship management

5.3.3 Final Program Assessment

Program Capstone: Enterprise FinOps Transformation Plan

Objective: Develop a comprehensive FinOps transformation plan for a real or simulated enterprise environment.

Requirements:

1. **Current State Assessment:** Maturity evaluation across all capability domains
2. **Target State Vision:** 18-month FinOps maturity goals
3. **Organizational Design:** Team structure, roles, and governance model
4. **Technology Roadmap:** Tool selection and implementation plan
5. **Quick Wins:** 90-day action plan with measurable savings targets
6. **Metrics Framework:** KPIs, dashboards, and reporting cadence
7. **Change Management:** Training, communication, and adoption strategy
8. **Sustainability Integration:** GreenOps considerations

Format: Comprehensive strategy document (30–50 pages) with executive presentation

Evaluation: Strategic coherence, technical depth, organizational feasibility, measurability

Chapter 6

Supplementary Materials

6.1 Recommended Reading Schedule

Week	Primary Reading	Supplementary Reading
1–2	Cloud FinOps (2e), Ch. 1–6	FinOps Foundation online resources
3–4	Cloud FinOps (2e), Ch. 7–11	Efficient Cloud FinOps, Ch. 1–3
5–6	AWS FinOps Simplified (full)	AWS Well-Architected Framework
7–8	FinOps Handbook for Azure (full)	Azure Well-Architected Framework
9–10	Efficient Cloud FinOps, Ch. 4–12	GCP Cloud Architecture Framework
11–12	FinOps for Snowflake (full)	Snowflake documentation
13–14	Practical FinOps, Part I–II	Cloud provider automation docs
15–16	Practical FinOps, Part III	AI/ML platform documentation
17–20	Scaling Cloud FinOps (full)	FinOps Foundation case studies
21–24	Cloud FinOps (2e), Ch. 12–14	Industry sustainability reports

Table 6.1: Weekly Reading Schedule

6.2 FinOps Certification Alignment

This curriculum prepares participants for FinOps Foundation certifications:

Certification	Coverage	Curriculum Alignment
FinOps Certified Practitioner (FOCP)	Foundational FinOps knowledge	Phases 1–2
FinOps Certified Professional (FCP)	Advanced practitioner skills	Phases 3–4
FinOps Certified Engineer (FCE)	Technical implementation	Phases 2–3

Table 6.2: Certification Alignment Matrix

6.3 Key Performance Indicators (KPIs)

6.3.1 Cost Efficiency Metrics

- **Effective Savings Rate:** (On-demand equivalent - Actual cost) / On-demand equivalent
- **Commitment Coverage:** Committed spend / Total eligible spend
- **Waste Rate:** Unused resources cost / Total cost
- **Rightsizing Opportunity:** Potential savings from rightsizing / Total compute cost

6.3.2 Operational Metrics

- **Tagging Compliance:** Tagged resources / Total resources
- **Budget Accuracy:** |Forecast - Actual| / Actual
- **Anomaly Detection Rate:** Detected anomalies / Total anomalies
- **Mean Time to Optimization:** Average time from identification to remediation

6.3.3 Business Value Metrics

- **Cost per Unit:** Cloud cost / Business unit (transaction, user, revenue dollar)
- **Cloud ROI:** (Business value generated - Cloud cost) / Cloud cost
- **Engineering Efficiency:** Value delivered / Engineering cloud spend

6.4 Tool Ecosystem Reference

6.4.1 Cloud-Native Tools

Category	AWS	Azure	GCP
Cost Visibility	Cost Explorer, CUR	Cost Management + Billing	Cloud Billing, Big-Query
Budgets/Alerts	AWS Budgets	Azure Budgets	Cloud Billing Budgets
Optimization	Compute Optimizer	Azure Advisor	Recommender
Commitments	Savings Plans, RIs	Reserved Instances	CUDs
Anomaly Detection	Cost Anomaly Detection	Anomaly Detector	Built-in alerts

Table 6.3: Cloud-Native FinOps Tool Comparison

6.4.2 Third-Party Tools

Tool	Primary Use Case
Apptio Cloudability	Enterprise multi-cloud cost management
CloudHealth (VMware)	Multi-cloud governance and optimization
Spot by NetApp	Container and compute optimization automation
Kubecost	Kubernetes cost allocation and optimization
Vantage	Developer-focused cost intelligence
Infracost	Infrastructure-as-code cost estimation
Densify	ML-powered resource optimization
nOps	AWS cost optimization automation

Table 6.4: Third-Party FinOps Tools

6.5 Glossary of Key Terms

Chargeback	Allocating cloud costs directly to consuming business units
Showback	Displaying cloud costs to teams without direct billing impact
Unit Economics	Cost metrics normalized by business units (cost per user, transaction, etc.)
Rightsizing	Adjusting resource capacity to match actual workload requirements
Reserved Instance	Pre-purchased compute capacity at discounted rates
Savings Plan	Flexible commitment for compute usage with discounted pricing
Committed Use Discount	GCP equivalent of reserved capacity pricing
Spot Instance	Unused capacity available at steep discounts with interruption risk
Tagging	Metadata attached to resources for cost allocation and governance
FinOps Maturity	Organizational capability level: Crawl, Walk, Run

Appendix A

Assessment Rubrics

A.1 Phase 1 Capstone Rubric

Criterion	Excellent (4)	Good (3)	Adequate (2)	Needs Work (1)
Business Case Clarity	Compelling	Clear	Basic	Unclear
Technical Accuracy	Comprehensive	Accurate	Minor errors	Significant gaps
Organizational Fit	Tailored	Appropriate	Generic	Misaligned
Actionability	Immediately executable	Feasible	Conceptual	Impractical
Documentation Quality	Professional	Clear	Adequate	Poor

Table A.1: Phase 1 Assessment Rubric

A.2 Program Capstone Rubric

Criterion	Excellent (4)	Good (3)	Adequate (2)	Needs Work (1)
Strategic Coherence	Integrated vision	Aligned	Fragmented	Disconnected
Technical Depth	Expert-level	Proficient	Basic	Superficial
Measurability	Comprehensive KPIs	Key metrics	Limited	No metrics
Change Management	Complete strategy	Good plan	Acknowledged	Ignored
Innovation	Novel approaches	Best practices	Standard	Outdated
Presentation Quality	Executive-ready	Professional	Adequate	Unprepared

Table A.2: Program Capstone Assessment Rubric

Appendix B

Sample Lab Worksheets

B.1 Cloud Spend Discovery Worksheet

Discovery Item	Finding
Total Monthly Cloud Spend	\$ _____
Number of Accounts/Subscriptions	-----
Top 5 Services by Cost	1. ____ 2. ____ 3. ____ 4. ____ 5. ____
Tagging Coverage Percentage	----- %
Reserved Instance Coverage	----- %
Identified Waste (Unused Resources)	\$ _____
Current FinOps Maturity Level	Crawl / Walk / Run

Table B.1: Cloud Spend Discovery Worksheet Template

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This curriculum draws upon the collective wisdom of the FinOps community, with special recognition to the authors of the core texts that form the foundation of this program:

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