

Course description

The Advanced Generative AI Development on AWS is designed for developers seeking to master the implementation of production-ready generative AI solutions on AWS. The course addresses the needs of organizations embarking on their generative AI journey and how to build comprehensive generative AI strategies that align with broader business objectives.

This advanced 3-day instructor-led training builds expertise across the entire generative AI stack - from foundation models to enterprise integration patterns. In addition, you will learn about advanced data processing techniques, vector database implementation and retrieval augmentation, sophisticated prompt engineering and governance, agentic AI systems and tool integration, AI safety and security measures, performance optimization and cost management strategies, comprehensive monitoring and observability solutions, testing and validation frameworks.

The course structure follows AWS's proven model for generative AI adoption, progressing from experimentation to production-ready implementations.

- Course level: Advanced
- Duration: 3 day

Activities

This course includes presentations, hands-on labs, demonstrations, and group exercises.

Course objectives

In this course, you will learn to:

- Develop production-ready generative AI solutions using AWS services that meet enterprise requirements for security, scalability, and reliability
- Evaluate and select appropriate foundation models for specific business use cases, including benchmarking performance and implementing dynamic model selection architectures
- Design and implement foundation model systems with circuit breakers, cross-region deployment, and degradation strategies
- Build comprehensive data processing pipelines for multi-modal inputs, including validation workflows and optimization techniques
- Implement sophisticated vector database solutions using Amazon Bedrock Knowledge Bases, OpenSearch, and hybrid approaches for effective retrieval augmentation
- Create and manage advanced prompt engineering frameworks, including chain-of-thought reasoning and enterprise-wide prompt governance systems
- Explain components of Agentic AI frameworks and Amazon Bedrock AgentCore
- Implement comprehensive AI safety and security controls, including content filtering, privacy preservation, and adversarial testing mechanisms
- Optimize performance and manage costs through token efficiency strategies, batching implementations, and intelligent caching systems
- Design and implement comprehensive monitoring and observability solutions for foundation model applications
- Create systematic testing and validation frameworks for continuous quality assurance of AI applications
- Integrate generative AI solutions within enterprise environments using secure, compliant, and scalable architectural patterns

Intended audience

This course is intended for those with limited prior knowledge of generative AI:

- Software developers
- Technical Professionals

Prerequisites

We recommend that attendees of this course have:

- AWS Technical Essentials
- Generative AI Essentials on AWS
- 2 or more years of experience building production grade applications on AWS or with opensource technologies, general AI/ML or data engineering experience
- 1 year of hands-on experience implementing generative AI solutions

Course outline

Day 1

Module 1: Foundation Model Selection and Configuration

- Enterprise foundation model evaluation framework
- Dynamic model selection architecture patterns
- Resilient foundation model system designs
- Cost optimization and economic modeling

Module 2: Advanced Data Processing for Foundation Models

- Comprehensive data validation and quality assurance
- Multi-modal data processing pipelines
- Input optimization and performance enhancement

Module 3: Vector Databases and Retrieval Augmentation

- Enterprise vector database architecture
- Advanced document processing and chunking strategies
- Sophisticated retrieval system implementation
- Hands-on Lab: Develop Retrieval Augmented Generation (RAG) Applications with Amazon Bedrock Knowledge Bases

Day 2

Module 4: Prompt Engineering and Governance

- Advanced prompt engineering frameworks
- Complex prompt orchestration systems
- Enterprise prompt governance and management
- Hands-on Lab: Develop conversation pattern with Amazon Bedrock APIs

Module 5: Implementing Agentic AI Frameworks with Amazon Bedrock AgentCore

- Agentic AI Frameworks
- Amazon Bedrock AgentCore

Module 6: AI Safety and Security

- Comprehensive content safety implementation
- Privacy-preserving AI architecture
- AI governance and compliance frameworks
- Day 3
- Module 7: Performance Optimization and Cost Management
- • Token efficiency and cost optimization
- • High-performance system architecture
- • Intelligent caching systems implementation
- • Hands-on Lab: Building Secure and Responsible Gen AI with Guardrails for Amazon BedrockAgentic AI Frameworks
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About CloudThat

Established in 2012, CloudThat is an award-winning company and the first in India to offer cloud training and consulting services for individuals and enterprises worldwide. Recently, it won Google Cloud's New Training Partner of the Year Award for 2025, becoming the first company in the world in 2025 to hold awards from all three major cloud giants: AWS, Microsoft, and Google. CloudThat notably won consecutive AWS Training Partner of the Year (APJ) awards in 2023 and 2024 and the Microsoft Training Services Partner of the Year Award in 2024, bringing its total award count to an impressive 12 awards in the last 8 years.

CloudThat specializes in Cloud Migration, Data Platforms, DevOps, IoT, and cutting-edge technologies like Gen AI & AI/ML. As a Microsoft Solutions Partner, AWS Premier Tier Training Partner, Google Cloud Platform Partner, and collaborator with leading organizations like HPE, Oracle, Nvidia and Databricks, CloudThat has trained over 850,000 professionals across 600+ cloud certifications, empowering students and professionals worldwide to advance their skills and careers.

To know more about our cloud certification training, email at sales@cloudthat.com or call us at +91-8880002200 or +1-8555588830 for those from outside India.