

Course description

In this advanced two-day course, software developers learn to build and customize AI solutions by using Amazon Bedrock programmatically. Through hands-on exercises and labs, participants will invoke foundation models through Amazon Bedrock APIs, implement Retrieval Augmented Generation (RAG) patterns with Amazon Bedrock Knowledge Bases, and develop AI agents with tool integration. The course focuses on the practical implementation of prompt engineering techniques, responsible AI practices with Amazon Bedrock Guardrails, open source framework integration, and architectural patterns for real-world business applications.

- Course level: Advanced
- Duration: 2 days

Activities

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

Course objectives

In this course, you will learn to do the following:

- Develop generative AI applications using Amazon Bedrock.
- Design architecture patterns of generative AI applications.

- Configure Amazon Bedrock APIs to invoke foundation models (FMs) programmatically.
- Develop agentic AI applications by integrating Amazon Bedrock tools and open source frameworks.
- Build custom solutions with Retrieval Augmented Generation (RAG) and Amazon Bedrock Knowledge Bases.
- Integrate open source SDKs with Amazon Bedrock to build business.
- Optimize model responses by applying prompt engineering techniques.
- Evaluate generative AI application components.
- Implement responsible AI practices to protect generative AI. ation

Intended audience

This course is intended for software developers.

Prerequisites

We recommend that attendees of this course have:
- Completed the Generative AI Essentials AWS instructor-led course
- Intermediate-level proficiency in Python
- Familiarity with AWS Cloud

Course outline

Day 1

Course Introduction

Module 1: Exploring Components of Generative AI Applications on AWS
- Understanding generative AI concepts
- Identifying AWS generative AI stack components
- Designing generative AI application components

Module 2: Programming with Amazon Bedrock
- Guiding model response generation
- Using Amazon Bedrock programmatically
- Hands-on lab: Develop with Amazon Bedrock APIs
- Hands-on lab: Develop Streaming Patterns with Amazon Bedrock APIs

Module 3: Applying Prompt Engineering for Developers
- Introducing prompt engineering
- Introducing prompt techniques

- Optimizing prompts for better results

Module 4: Using Amazon Bedrock APIs in Common Architectures

- Implementing architecture patterns with Amazon Bedrock APIs
- Exploring common use cases
- Adding conversational memory to extend context
- Hands-on lab: Develop Conversation Patterns with Amazon Bedrock APIs

Module 5: Customizing Generative AI Responses with RAG

- Implementing Retrieval Augmented Generation (RAG)
- Using Amazon Bedrock Knowledge Bases
- Hands-on lab: Develop Retrieval Augmented Generation (RAG) Applications with Amazon Bedrock Knowledge Bases

Module 6: Integrating Open Source Frameworks with Amazon Bedrock

- Invoking a foundation model in Amazon Bedrock using LangChain
- Using LangChain for context-aware responses
- Hands-on lab: Develop a Generative AI Application Pattern using Open Source Frameworks and Amazon Bedrock Knowledge Bases

Day 2

Module 7: Evaluating Generative AI Application Components

- Evaluating application components
- Evaluating model output
- Evaluating RAG output
- Optimizing latency and cost
- Hands-on lab: Evaluating Retrieval Augmented Generation (RAG) Applications

Module 8: Implementing Responsible AI

- Understanding responsible AI
- Mitigating bias and addressing prompt misuses
- Using Amazon Bedrock Guardrails
- Hands-on lab: Securing Generative AI Applications Using Bedrock Guardrails

Module 9: Using Tools and Agents in Generative AI Applications

- Using tools
- Understanding AI agents
- Understanding open source agentic frameworks
- Understanding agent interoperability

Module 10: Developing Amazon Bedrock Agents

- Implementing Amazon Bedrock Flows
- Designing Amazon Bedrock Agents
- Developing Amazon Bedrock Inline Agents
- Designing multi-agent collaboration

- Using Amazon Bedrock AgentCore
- Hands-on lab: Developing Amazon Bedrock Agents Integrated with Amazon Bedrock Knowledge Bases and Guardrails

Course Wrap-Up

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Your course overview ends here.

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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.