

# Generative AI Infrastructure Engineer - AWS

**Beyond the Cloud** is designed to empower you for success in the rapidly evolving IT landscape. This is a 10-week comprehensive program that provides essential technical and soft skills training for in-demand digital infrastructure roles. Please note *Transition to your Cloud Career* and *Agile Industry Mindset (AIM)* workshops run concurrently with Technical and Soft Skills courses during the 10-week period. Please contact your administrator for the schedule.

	Course Name	Learning Platform	Learning Objectives	Time Commitment
Course 1	Building Generative AI-Powered Applications with Python	Coursera	<ul style="list-style-type: none"> <li>Learn new concepts from industry experts</li> <li>Gain a foundational understanding of a subject or tool</li> <li>Develop job-relevant skills with hands-on projects</li> <li>Earn a shareable career certificate from IBM</li> </ul>	13 hours (approximately)
Course 2	AWS Cloud Technical Essentials	AWS	<ul style="list-style-type: none"> <li>Gain information on how to build, compare, and apply highly available, fault tolerant, scalable, and cost-effective cloud solutions.</li> </ul>	16 hours (approximately)
Course 3	Amazon Bedrock Getting Started	AWS	<ul style="list-style-type: none"> <li>Understand how Amazon Bedrock works.</li> <li>Familiarize yourself with basic concepts of Amazon Bedrock.</li> <li>Recognize the benefits of Amazon Bedrock.</li> <li>List typical use cases for Amazon Bedrock.</li> <li>Describe the typical architecture associated with an Amazon Bedrock solution.</li> <li>Understand the cost structure of Amazon Bedrock.</li> <li>Implement a demonstration of Amazon Bedrock in the AWS Management Console.</li> </ul>	1 hour (approximately)
Course 4	Planning a Generative AI Project	AWS	<ul style="list-style-type: none"> <li>Discuss the technical foundations and key terminology for generative AI.</li> <li>Explain the steps for planning a generative AI project.</li> <li>Identify some of the risks and mitigations when using generative AI.</li> </ul>	1 hour (approximately)
Course 5	Building a Generative AI-Ready Organization	AWS	<ul style="list-style-type: none"> <li>Describe key concepts and strategies that you need to know to integrate generative AI into your organization</li> <li>Describe how to build a generative AI-ready organization</li> <li>Describe how to frame discussions with your employees and overcome the challenges you might face</li> <li>Describe the importance of governance and organizational structure in implementing generative AI successfully</li> </ul>	1 hour (approximately)

Course 6	Digital Classroom - Developing Generative AI Applications on AWS	AWS	<ul style="list-style-type: none"> <li>• Define the importance of generative AI and explain its potential risks and benefits.</li> <li>• Discuss the technical foundations and key terminology for generative AI.</li> <li>• Recognize the benefits and use cases of Amazon Bedrock.</li> <li>• Describe the basic functions, types, and various use cases of foundation models.</li> <li>• Define prompt engineering and apply general best practices when interacting with FMs.</li> <li>• Describe Amazon Bedrock foundation models, inference parameters, and key Amazon Bedrock APIs.</li> <li>• Describe architecture patterns that can be implemented with Amazon Bedrock for building useful generative AI applications.</li> <li>• Describe how to integrate LangChain with large language models (LLMs), prompt templates, chains, chat models, text embeddings models, document loaders, retrievers, and Agents for Amazon Bedrock.</li> <li>• Build and test several examples of use cases that employ various Amazon Bedrock models, LangChain, and the Retrieval Augmented Generation (RAG) approach.</li> </ul>	16 hours (approximately)
Course 7	AWS SimuLearn: Prompt Engineering with Amazon Bedrock	AWS	<ul style="list-style-type: none"> <li>• Explain zero-shot learning in text generation, and apply this technique to generate recommendations based on metadata for diverse content.</li> <li>• Explain chain-of-thought (CoT) prompting, and evaluate the accuracy of the generated estimates in real-world scenarios.</li> <li>• Demonstrate how different prompt engineering techniques can improve a model's output.</li> </ul>	1 hour (approximately)
Course 8	AWS SimuLearn: Build and Deploy Tools Using LLM Agents	AWS	<ul style="list-style-type: none"> <li>• Identify the Agents for Amazon Bedrock core functions.</li> <li>• Identify the steps involved in configuring an agent so that Amazon Bedrock can interact with organizational data and user queries.</li> <li>• Explain the process of integrating an agent to automate a customer-focused task, such as handling reservations or customer inquiries.</li> </ul>	1 hour (approximately)
Course 9	AWS SimuLearn: Fine-Tuning an LLM on Amazon SageMaker	AWS	<ul style="list-style-type: none"> <li>• Identify the techniques for fine-tuning a pretrained large language model (LLM).</li> <li>• Gain hands-on experience fine-tuning LLMs with Amazon SageMaker.</li> <li>• Demonstrate the process of fine-tuning an LLM by using custom datasets.</li> <li>• Demonstrate how to integrate a SageMaker endpoint into a practical application.</li> </ul>	1 hour (approximately)
Course 10	AWS SimuLearn: Automate Fine-Tuning of an LLM	AWS	<ul style="list-style-type: none"> <li>• Determine how AWS Step Functions can be used to orchestrate the fine-tuning process for an LLM.</li> <li>• Demonstrate how to build a CI/CD pipeline to provision workflows for processing and publishing machine learning models.</li> </ul>	1 hour (approximately)

Course 11	AWS SimuLearn: Modern Data Architectures with LLMs	AWS	<ul style="list-style-type: none"> <li>• Explore and determine how to request access to Amazon Bedrock foundation models, such as the Amazon Titan Text G1 - Lite model.</li> <li>• Determine how to run AWS Glue crawlers to generate a Data Catalog from data stored in Amazon S3.</li> <li>• Determine how to query data in Amazon Athena by using Trino SQL, and then how to preview the query results.</li> <li>• Determine how to connect to an Athena database by using SQLAlchemy in a Jupyter notebook running on Amazon SageMaker Studio Classic.</li> <li>• Determine how to use LangChain and the Amazon Titan Text Lite model in Amazon Bedrock to convert natural language questions into SQL queries and generate natural language responses from the results.</li> </ul>	1 hour (approximately)
			Total hours	53 hours (approximately)