



Developing apps with Vertex AI Agent Builder

This course teaches you how to use Google tools to create search and chat solutions that take advantage of generative AI. You will build applications using Vertex AI Agent Builder and see how to deploy, monitor, and troubleshoot them. In addition, you will learn how to build your own custom search engine using embeddings and Vertex AI Vector Search. This course is designed for partners who are working with clients to enhance their search and chat capabilities using generative AI. Developers, application designers, architects, and ML engineers would benefit from this course.



DURATION

1 day
3 hours of instructor lecture
2.5 hours of demos
2.5 hours of hands-on labs and activities



LEVEL

Advanced



FORMAT

Instructor-led

What you'll learn

- Build semantic search applications and generative AI chatbots using Agent Builder and Vertex AI tools.
- Program custom search engines using embeddings and Vertex AI Vector Search.
- Deploy semantic search apps for websites, as well as structured and unstructured data sources using Agent Builder search apps and data stores.
- Add Gen AI features to chatbots using Dialogflow CX.
- Create generative AI agents that can access RAG systems and APIs.
- Secure, monitor, and troubleshoot production apps built using Vertex AI Agent Builder.



Overview	7 modules · 4 labs · 1 classroom activity
Who this course is for	<ul style="list-style-type: none">• Those developing search and conversation applications using Google tools like Vertex AI Agent Builder, Gemini, PaLM, and Vector Search.• AI/ML Engineers• Conversational designers• App developers• Enterprise and ML architects
Products	<ul style="list-style-type: none">• Vertex AI• Vertex AI Agent Builder• Vector Search• Dialogflow CX• Vertex AI APIs
Prerequisite	<ul style="list-style-type: none">• Generative AI Fundamentals• Text Prompt Engineering Technique• At least one professional certification: either Professional Data Engineer, Profession Machine Learning Engineer, or Professional Cloud Developer
Not covered	<ul style="list-style-type: none">• Foundational ML theory and MLOps• Python programming• Google Cloud foundations• Google Cloud services not directly related to Vertex AI, generative AI, ML, or Agent Builder

Module 01 **Generative AI on Google Cloud**

Topics	<ul style="list-style-type: none">• History of AI at Google• Generative AI use cases• Generative AI products in Google Cloud
Objectives	<ul style="list-style-type: none">• Understand the history of AI at Google.• Recognize use cases for AI and ML.• Choose the right Google product for ML and AI use cases.
Activities	Lecture



Module 02 Building Custom Search Experiences

Topics	<ul style="list-style-type: none">• Understanding Search• Newer trends in Search• Storing embeddings• Retrieval augmented generation (RAG)
Objectives	<ul style="list-style-type: none">• Gain a high level understanding of a basic search engine.• Create text embeddings for semantic search, classification, clustering, and outlier detection.• Store and query embeddings using Vertex AI Vector Search.• Set up retrieval augmented generation (RAG) systems to improve generative AI results.
Activities	Lecture and lab

Module 03 Agent Builder Search Apps

Topics	<ul style="list-style-type: none">• Vertex AI Agent Builder architecture• Managing data stores• Creating search apps
Objectives	<ul style="list-style-type: none">• Leverage Agent Builder to build search apps.• Manage data sources for search and conversation.• Build search apps for websites and structured and unstructured data sources.
Activities	Lecture and lab

Module 04 Taking Search Apps from POC to Production

Topics	<ul style="list-style-type: none">• Displaying Vertex AI Search results• Monitoring and troubleshooting Search
Objectives	<ul style="list-style-type: none">• Configure Search results for websites with structured and unstructured data.• Troubleshoot and manage production Search solutions.
Activities	Lecture

Module 05 Creating Dialogflow CX Chatbots with Agent Builder

Topics	<ul style="list-style-type: none">• Creating chatbots with Agent Builder• Deploying a chatbot
--------	--



Topics	<ul style="list-style-type: none">• Understanding Dialogflow CX
Objectives	<ul style="list-style-type: none">• Build and deploy chatbots with Vertex AI Agent Builder.• Customize chatbots using Dialogflow CX.
Activities	Lecture and lab

Module 06 **Generative AI Features of Dialogflow CX and Agent Builder**

Topics	<ul style="list-style-type: none">• Generative AI in Dialogflow CX• Generators• Generative AI fallbacks• Generative playbooks• Vertex AI generative agents
Objectives	<ul style="list-style-type: none">• Add generative AI capabilities to Dialogflow CX.• Understand use cases for generative AI in Dialogflow.• Create Dialogflow agents with generators, generative fallbacks, and playbooks.• Create generative agents using Agent Builder.
Activities	Lecture and lab

Module 07 **Taking Chat Agents from POC to Production**

Topics	<ul style="list-style-type: none">• Vertex AI agents• Production best practices
Objectives	<ul style="list-style-type: none">• Design conversational AI solutions.• Secure, troubleshoot, and manage production chat solutions.
Activities	Lecture

