



Building Agents with Antigravity and Agents CLI

Course description

Building Agents with Antigravity and Agents CLI is an advanced-level, instructor-led course designed for software developers and engineers, platform and DevOps engineers, technical and solutions architects, and automation specialists who want to build and manage enterprise-grade AI agents.

The course introduces modern agent development workflows using Antigravity, Agents CLI, and the Agent Development Kit (ADK). Participants learn how to move from manual implementation toward high-level orchestration using vibe coding, specification-driven development, architectural prompting, and output verification.

Learners explore Antigravity and its desktop and CLI capabilities, Agents CLI lifecycle skills, rapid project scaffolding, ADK project structure, local validation, testing, and evaluation workflows. The course then progresses into managed enterprise agents using the Managed Agents API, including control plane and data plane operations, secure sandbox environments, network allowlists, external data mounts, and deployment strategies. Finally, learners learn how to extend agents with tools, skills, MCP servers, and mounted data, and how to operate agents using asynchronous interactions, streaming, resilient reconnection patterns, cost telemetry, persistent state, and data security controls.

- Course level: Advanced
- Duration: 0.5 day

Activities

This course includes instructor-led presentations, technical demonstrations, guided agent development activities, Antigravity walkthroughs, Agents CLI exercises, ADK project scaffolding, hands-on agent evaluation, managed agent deployment, MCP integration demonstrations, security configuration scenarios, agent operations walkthroughs, and architecture discussions.

Course objectives

In this course, you will learn to:

- Utilize Antigravity and the Agents CLI to accelerate enterprise agent development, and explain how ADK and the Agents API simplify the creation of autonomous enterprise agents.
- Apply the Vibe Coding model to orchestrate agent development.
- Create formal agent specifications using Gherkin syntax and evaluate generated agent output against stable specifications.
- Differentiate between Agent Studio, Managed Agents API, and Antigravity.
- Use Antigravity Desktop and its Artifacts panel to inspect and manage generated outputs.
- Operate the Antigravity CLI for agentic coding tasks and terminal commands.
- Explain how Agents CLI bridges the agent context gap through domain-specific skills, and apply the seven core Agents CLI lifecycle skills.
- Manage development sessions by explicitly loading relevant skills.
- Rapidly scaffold ADK agent projects using the Agents CLI, and add deployment targets and package dependencies through command-line scaffolding.
- Design customized agent workspaces using natural-language intent.
- Explain the ADK project structure and development lifecycle.
- Validate and test agents locally using Agents CLI lint and playground.
- Configure agents with models, instructions, and tools.
- Execute agent evaluations, analyze execution traces, and create evaluation datasets and metric configurations.
- Analyze evaluation results and iteratively improve agent behavior.
- Differentiate between code-first and infrastructure-first deployment strategies.
- Configure secure managed agent execution environments and understand control plane and data plane operations.

- Build, run, and harden agents using the Managed Agents API.
- Differentiate between tools and skills, and explain the architecture and role of Model Context Protocol (MCP).
- Assemble agents using built-in tools, MCP servers, mounted data, and published skills.
- Run agents using asynchronous long-running tasks and SSE streaming, and implement fallback polling and reconnection patterns.
- Analyze execution traces and token telemetry for operational cost management.
- Manage multi-turn state using interaction and environment scopes, and apply data security boundaries when operating enterprise agents.

Intended audience

This course is intended for professionals building, deploying, and operating enterprise AI agents:

- Software Developers and Engineers
- Platform Engineers
- DevOps Engineers
- Technical Architects
- Solutions Architects
- Automation Specialists
- Cloud Professionals
- AI Application Developers
- Professionals building enterprise AI agents
- Professionals responsible for deploying and operating agent applications

Prerequisites

We recommend that attendees of this course have:

- Familiarity with Google Cloud Platform.
- Familiarity with software development concepts is recommended.
- Understanding of AI agents and application development is beneficial.
- Familiarity with the Agent Development Kit is beneficial.

Course outline

Module 1: Deep Dive into ADK Vibe Coding

- The Vibe Coding model: design intent, delegation, and verification phases
- The shift from manual implementation to high-level agent development orchestration
- Spec-driven development and Gherkin syntax
- Defining correct behaviors, failure states, and edge cases before creating prompts
- Architectural prompting and output verification
- Preventing compounding errors during interactive agent development
- Demo: Vibe Coding model and output verification.
- Walkthrough: Specification-driven development with a Gherkin-based agent specification.

Module 2: Antigravity

- The Antigravity ecosystem
- Agent Studio, Managed Agents API, and Antigravity: selecting the right agent-building solution
- Antigravity 2.0 Desktop and artifact management
- Running and referencing generated artifacts
- Antigravity CLI and enterprise setup
- Maintaining a unified workspace and context across graphical and command-line interfaces
- Demo: Antigravity 2.0 Desktop and the Artifacts panel.
- Walkthrough: Antigravity CLI and enterprise setup.

Module 3: Agents CLI

- Bridging the agent context gap
- How domain-specific skills align coding agent output with the ADK 2.0 surface
- The seven core lifecycle skills across phases of the agent development loop
- Context management and version control
- Demo: Agents CLI workflow and skill loading.
- Walkthrough: The seven core lifecycle skills and a context management scenario.

Module 4: Project Scaffolding

- Rapid project generation with the agents cli scaffold create command
- Bypassing interactive configuration dialogs through command-line scaffolding
- Package management and deployment enhancements
- Intent-driven scaffolding: translating agent goals into a structured development workspace
- Hands-on: Agent project scaffolding.
- Demo: Package and deployment configuration, and intent-driven workspace creation.

Module 5: The ADK Project Structure

- The end-to-end ADK development lifecycle and project structure
- Key files and directories generated during scaffolding
- Core agent configuration: models, instructions, and tools
- Binding agent components within a standardized application wrapper
- Local code validation and interactive testing
- Demo: agents cli lint and playground testing.
- Guided exercise: Agent configuration.

Module 6: Evaluation

- Evaluation structure and workflow using the Agents CLI
- Generating and analyzing execution traces
- Grading agent performance using LLM-as-judge metrics
- Evaluation configurations, datasets, and metric definitions
- Evaluation best practices, common failure modes, and iterative refinement
- Demo: Agent evaluation workflow, execution traces, and LLM-as-judge metrics.
- Scenario: Analyze evaluation results and refine agent logic.

Module 7: Managed Agents API

- Infrastructure-first vs. code-first approaches
- Selecting an appropriate deployment foundation for enterprise agent applications
- The sandbox environment and security boundaries
- Network allowlists and external data mounts to control agent network and data access

- Control plane vs. data plane operations: durable agent resources and ephemeral interactions
- Demo: Deployment approaches, sandbox environment, and security configuration.
- Hands-on Lab: Build, Run, and Harden Agents with Managed Agents API.

Module 8: Tools and Skills

- Tools vs. skills: executable tools and instructional skills
- Selecting appropriate tools and skills for complex agent tasks
- Model Context Protocol (MCP) architecture
- How MCP decouples agent logic from external tool execution
- Agent assembly on the control plane and skill publication
- Integrating built-in tools, MCP server connections, mounted data, and published skills
- Demo: MCP server connections and agent assembly.
- Walkthrough: MCP architecture and skill publication.

Module 9: Run and Operate the Agent

- Robust production execution and reconnection patterns
- Asynchronous long-running tasks and SSE streaming for interactive agent responses
- Fallback polling mechanisms to handle connection drops
- The ReAct loop, execution traces, and identifying inefficient reasoning loops
- Granular token telemetry for operational cost management
- State management: context persistence across turns, interaction and environment scopes
- Maintaining strict data security boundaries
- Demo: SSE streaming, fallback polling, and ReAct loop traces.
- Walkthrough: Cost telemetry analysis, state management, and a data security scenario.

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