COURSE TABLE OF CONTENTS

API Server Development with Streaming and Server-Sent Events (SSE)

OEM: Koenig Original • Duration: 3 Days (24 hrs)

COURSE MODULES & TOPICS

Module 1: Introduction to Google ADK
- Overview of Google Agent Development Kit
- Capabilities of Google ADK

Module 2: Environment Setup and Resources
- Google ADK resources
- Setting up Google environment for coding

Module 3: Building Your First Agent Application
- Create agent application with Gemini models

Module 4: Integrating Tools and API Servers
- Add Tavily search tool
- API server setup for testing

Module 5: Streaming and Server-Sent Events (SSE)
- API server testing with streaming
- Implementing Server-Sent Events (SSE)

Module 6: Context and Conversation Management
- Context management with include_contents

Module 7: Direct Model API Calls
- Make direct API calls to models without ADK agent

Module 8: Manual Agent Execution
- Run agents manually without adk web or adk run

Module 9: Sessions and State Management
- Google ADK sessions
- State management concepts

Module 10: State Types and Persistence
- Four types of state based on scope and persistence

Module 11: Building a Stateful Translation Agent
- End-to-end exercises for stateful translation agent

Module 12: Agent Delegation and Subagents
- Automatic agent delegation to subagents

Module 13: Sequential, Parallel, and Loop Agents
- SequentialAgent usage
- ParallelAgent usage
- LoopAgent usage

Module 14: Safety and Security Guardrails
- Implementing guardrails for AI agents

Module 15: Integrating MCP Servers
- Integrate MCP servers with Google ADK agents
- Custom MCP server exposing filesystem tools

Module 16: Config-Based Agent Development
- Build AI agents using config-based approach
- YAML agent configurations

Module 17: Multi-Agent Architectures and Delegation Patterns
- Multi-agent tutor architecture
- Delegation pattern with sub-agents

Module 18: Design Patterns and Best Practices
- Google ADK design patterns
- Best practices for agentic apps
- Two main categories of agentic patterns

Module 19: Pattern-to-Component Mapping and Agent Hierarchy
- Pattern-to-ADK component mapping
- Agent classes and hierarchy
- Workflow agents

Module 20: Key Design Principles
- Key principles guiding Google ADK design

Module 21: Agent Architecture Patterns
- Solo agent design pattern
- Agent roles design pattern

Module 22: Agent Process and Interaction Patterns
- Prescribed plan design pattern
- Agent-to-agent handoff
- Agents as tools
- Multi-agent orchestration

Module 23: Advanced Design Patterns
- Reflexion design pattern
- ADK agent as MCP server
- Human-in-the-loop design pattern
- Hierarchical multi-agent/task decomposition
- Review/critique design pattern

Module 24: Applying Patterns and Principles

- Selecting patterns for ADK applications
- Principles for successful agentic apps

Module 25: Capstone Project: Multi-Agent Corporate Travel Management System

- Root coordinator agent and auto-delegation
- Sequential pipelines and parallel research
- Session state, callbacks, guardrails
- Artifact service and A2A protocol
- MCP integration and HITL
- Streamlit UI and quality refinement loops
- Pydantic output schemas and SQLite database
- ADK runner and session setup
- Policy documents and InMemorySessionService
- Basic authentication, project creation, approval gate
- Testing and documentation