COURSE TABLE OF CONTENTS

# Tavily Search Tool Fundamentals

OEM: Koenig Original • Duration: 5 Days (40 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
- Google environment setup for coding

### Module 3: Building Your First Agent Application
- Create agent application with LLM (Gemini Models)

### Module 4: Integrating Tavily Search Tool
- Add Tavily search tool
- API server setup for testing

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

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

### Module 7: Direct API Calls and Manual Agent Execution
- Direct API calls to models without ADK agent
- Run agents manually without adk web or adk run

### Module 8: Sessions and State Management
- Google ADK sessions
- State management and persistence
- Four types of state based on scope and persistence

### Module 9: Building Stateful Agents
- End-to-end exercises: stateful translation agent

### Module 10: Agent Delegation and Subagents
- Automatic agent delegation to subagents
- Delegation pattern with sub-agents

### Module 11: Sequential, Parallel, and Loop Agents
- SequentialAgent usage
- ParallelAgent usage
- LoopAgent usage

### Module 12: Safety and Security Guardrails
- Implementing guardrails for AI agents

### Module 13: Integrating MCP Servers
- Integrate MCP servers with Google ADK agents
- Custom MCP server exposing filesystem tools

### Module 14: Config-Based Agent Development
- Building agents using config-based approach
- YAML agent configurations for multi-agent tutor architecture

### Module 15: Agent Design Patterns and Best Practices
- Google ADK design patterns
- Best practices for agentic apps
- Two main categories of agentic patterns
- Pattern-to-ADK component mapping

### Module 16: Agent Classes and Architecture
- Agent classes and hierarchy
- Workflow agents
- Key design principles

### Module 17: Agent Architecture Patterns
- Solo agent design pattern
- Agent roles design pattern

### Module 18: Agent Process and Interaction Patterns
- Prescribed plan design pattern
- Agent-to-agent handoff
- Agents as tools
- Multi-agent orchestration

### Module 19: 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 20: Applying Patterns and Principles
- Selecting patterns for ADK applications
- Principles for successful agentic apps

### Module 21: 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, session setup, policy documents
- InMemorySessionService and basic authentication
- Project creation, approval gate, testing, documentation