


Learning Paths


Description: Structured progression from beginner to expert ADK development

 **Purpose:** Structured learning progression from ADK fundamentals to production mastery.

 **Source of Truth:** [do](https://github.com/raphaelmansuy/adk_training/tree/main/do) (https://github.com/raphaelmansuy/adk_training/tree/main/do) + [tutorial implementation/](https://github.com/raphaelmansuy/adk_training/tree/main/tutorial_implementation/) (https://github.com/raphaelmansuy/adk_training/tree/main/tutorial_implementation/) + [research/](https://github.com/raphaelmansuy/adk_training/tree/main/research/) (https://github.com/raphaelmansuy/adk_training/tree/main/research/) (ADK 1.15)

Beginner Path (1-2 weeks)

| Phase 1: Core Concepts (Days 1-3)

 **Tutorials:** [01 hello world agent.md](#) ([01_hello_world_agent.md](#)), [02 function tools.md](#) ([02_function_tools.md](#))


 **Goals:**

- Understand agent lifecycle
- Create basic LLM agents
- Implement function tools
- Run agents locally

 **Key Concepts:**

- Agent class structure
- Tool function patterns
- State management basics
- Local development setup

| Phase 2: Workflow Patterns (Days 4-7)

 **Tutorials:** [03_openapi_tools.md](#) (03_openapi_tools.md), [04_sequential_workflows.md](#) (04_sequential_workflows.md), [05_parallel_processing.md](#) (05_parallel_processing.md)

Goals:


- Integrate external APIs
- Build sequential pipelines
- Implement parallel processing
- Handle complex workflows

Key Concepts:

- OpenAPI tool generation
- SequentialAgent composition
- ParallelAgent optimization
- Error handling patterns

Intermediate Path (2-4 weeks)

| Phase 3: Advanced Patterns (Days 8-14)

 **Tutorials:** [06_multi_agent_systems.md](#) (06_multi_agent_systems.md), [07_loop_agents.md](#) (07_loop_agents.md), [08_state_memory.md](#) (08_state_memory.md)

Goals:


- Design multi-agent systems
- Implement iterative refinement
- Master state management
- Build complex agent hierarchies

Key Concepts:

- Agent communication patterns
- LoopAgent convergence criteria

- State scoping (session/user/app/temp)
- Memory persistence strategies

| Phase 4: Production Foundations (Days 15-21)

 **Tutorials:** [09_callbacks_guardrails.md](#) (09_callbacks_guardrails.md),
[10_evaluation_testing.md](#) (10_evaluation_testing.md), [11_built_in_tools_grounding.md](#)
(11_built_in_tools_grounding.md)

Goals:


- Implement safety guardrails
- Set up comprehensive testing
- Use built-in grounding tools
- Prepare for production deployment

Key Concepts:

- Callback integration
- Automated testing frameworks
- Grounding with web/data/location
- Quality assurance patterns

Advanced Path (4-8 weeks)

| Phase 5: Real-Time & Streaming (Days 22-28)

 **Tutorials:** [12_planners_thinking.md](#) (12_planners_thinking.md), [13_code_execution.md](#)
(13_code_execution.md), [14_streaming_sse.md](#) (14_streaming_sse.md), [15_live_api_audio.md](#)
(15_live_api_audio.md)

Goals:


- Master advanced reasoning
- Enable code execution
- Implement real-time streaming

- Handle multimodal inputs

Key Concepts:

- Custom planner strategies
- Code execution environments
- SSE and BIDI streaming
- Audio/video processing

| Phase 6: Enterprise Integration (Days 29-42)

 **Tutorials:** [16 mcp_integration.md](#) (16_mcp_integration.md), [17 agent_to_agent.md](#) (17_agent_to_agent.md), [18 events_observability.md](#) (18_events_observability.md), [19 artifacts_files.md](#) (19_artifacts_files.md)

Goals:

- Integrate MCP protocol
- Build distributed agent systems
- Implement comprehensive observability
- Handle file artifacts


Key Concepts:

- MCP tool standardization
- A2A communication protocols
- Event-driven architectures
- File system integration



Expert Path (8+ weeks)

| Phase 7: Production Mastery (Days 43-56)

 **Tutorials:** [20 yaml_configuration.md](#) (20_yaml_configuration.md), [21 multimodal_image.md](#) (21_multimodal_image.md), [22 model_selection.md](#) (22_model_selection.md), [23 production_deployment.md](#) (23_production_deployment.md)


Goals:

- Master configuration management
- Handle multimodal content
- Optimize model selection
- Deploy production systems

Key Concepts:

- YAML-based configuration
- Image/video/document processing
- Model performance optimization
- Cloud deployment strategies

| Phase 8: Advanced Topics (Days 57+)

 **Tutorials:** [24 advanced observability.md](#) (24_advanced_observability.md) through [34 pubsub adk integration.md](#) (34_pubsub_adk_integration.md)

Goals:

- Master Pub/Sub patterns
- Build event-driven systems
- Implement advanced integrations
- Create enterprise-scale solutions

Key Concepts:

- Event-driven agent communication
 - Scalable system architecture
 - Advanced integration patterns
 - Enterprise deployment strategies
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Specialization Tracks

| API Integration Specialist

Focus: External service integration, API design, authentication

Key Tutorials:

- 03_openapi_tools.md
- 16_mcp_integration.md
- 24-34_pubsub_integration.md

Skills: REST API design, OAuth flows, webhook handling

| Performance Optimization Expert

Focus: Speed, cost, and quality optimization

Key Tutorials:

- 05_parallel_processing.md
- 12_planners_thinking.md
- 22_model_selection.md

Skills: Parallel processing, model tuning, cost management

| Enterprise Architect

Focus: Large-scale systems, observability, security

Key Tutorials:

- 17_agent_to_agent.md
- 18_events_observability.md
- 23_production_deployment.md

Skills: Distributed systems, monitoring, compliance

| AI Product Builder

Focus: User experience, multimodal, real-time interaction

Key Tutorials:

- 14_streaming_sse.md
- 15_live_api_audio.md
- 21_multimodal_image.md

Skills: UX design, real-time systems, multimodal AI

Learning Resources

| Documentation

- **Mental Models:** Core concepts and architectural patterns
- **Tutorial Series:** 34 comprehensive implementation guides
- **Research:** ADK source code analysis and examples
- **ADK Cheat Sheet:** [Quick reference guide](#) ([adk-cheat-sheet.md](#)) for commands, patterns, and troubleshooting

| Practice Projects

Beginner Projects:

- Q&A chatbot with function tools
- Data processing pipeline
- Simple API integration

Intermediate Projects:

- Multi-agent content creation system
- Real-time data analysis dashboard
- E-commerce recommendation engine

Advanced Projects:

- Enterprise document processing system
- Real-time collaborative coding assistant
- Multimodal content analysis platform

| Community & Support

- **GitHub Issues:** Bug reports and feature requests
 - **Stack Overflow:** Technical Q&A with `google-adk` tag
 - **Discord/Slack:** Community discussions and help
 - **Official Docs:** Comprehensive API reference
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Progress Tracking

| Skill Assessment Checklist

Core Fundamentals ☐

- [] Agent lifecycle understanding
- [] Basic tool implementation
- [] Local development setup
- [] Simple workflow patterns

Intermediate Skills ☐

- [] Multi-agent system design
- [] State management mastery
- [] Production testing patterns
- [] API integration expertise

Advanced Capabilities ☐

- [] Real-time streaming implementation
- [] Enterprise observability


- [] Performance optimization
- [] Distributed system architecture

Expert Level ☐

- [] Custom planner development
 - [] Multimodal processing
 - [] Production deployment mastery
 - [] Enterprise integration patterns
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Key Takeaways

1. **Structured Progression:** Follow the 8-phase learning path for comprehensive mastery
2. **Hands-on Practice:** Complete tutorial implementations alongside theoretical learning
3. **Specialization Options:** Choose focus areas based on career goals and interests
4. **Continuous Learning:** ADK evolves rapidly - stay updated with latest patterns
5. **Community Engagement:** Join discussions, contribute to open source, share knowledge

 **Next:** Use the [Reference Guide](#) ([reference-guide.md](#)) for quick lookups and configuration examples. Check the [Glossary](#) ([glossary.md](#)) for definitions of key terms.

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