

AI-500T00-A: Design and implement multi-agent AI solutions

OEM: Microsoft • Duration: 4 Days (32 hrs) • Code: AI-500T00-A

COURSE MODULES & TOPICS

Architect production-grade multi-agent AI solutions in Azure

Design stateful agentic loops with Microsoft Foundry Agent Service

- Introduction
- Examine production agentic loop architecture
- Examine foundry responses api v2 model
- Implement agent reflection planning cycles
- Design session state context management
- Implement fork based sessions
- Migrate agentic loops agents v1 to v2
- Knowledge check
- Summary

Implement advanced multi-agent orchestration patterns in Microsoft Foundry

- Introduction
- Differentiate agentic multi agent architectures
- Examine advanced orchestration architectures
- Implement hub spoke orchestration
- Design parallel agent spawn synchronization
- Compare orchestration frameworks
- Knowledge check
- Summary

Apply task decomposition and agent collaboration strategies in Microsoft Foundry

- Introduction
- Design prompt chain workflows
- Implement dynamic adaptive task decomposition
- Configure agent handoff collaboration protocols
- Ensure handoff reliability context preservation
- Optimize decomposition granularity
- Knowledge check
- Summary

Design enterprise-scale agent communication with A2A in Azure

- Introduction
- Design agent agent ecosystems scale
- Implement distributed shared state management
- Design context isolation share strategies
- Build conflict detection resolution mechanisms
- Resolve conflicts maintain audit trails
- Knowledge check
- Summary

Build production-grade multi-agent capabilities with Microsoft Foundry

Design advanced prompting strategies for production AI agents

- Introduction
- Design multiturn reason prompt architectures
- Implement prompt injection defenses
- Build system prompt frameworks agent control
- Design multi intervention guardrail architectures
- Implement prompt version optimization
- Automate prompt regression optimization
- Design fine tune strategy data pipelines
- Knowledge check
- Summary

Build enterprise-grade tool ecosystems with MCP and Microsoft Foundry

- Introduction
- Design production mcp server architecture
- Build mcp servers error handle fallback
- Implement tool selection route logic
- Govern tool dependencies version
- Knowledge check
- Summary

Implement advanced RAG pipelines with Azure AI Search and Microsoft Foundry

- Introduction
- Design hybrid search architectures
- Implement rerank context rank
- Design dynamic knowledge source route
- Optimize chunk embed strategies
- Knowledge check
- Summary

Design multi-agent memory architectures with Azure Cosmos DB

- Introduction
- Examine memory architecture patterns
- Implement semantic memory vector storage
- Optimize memory retrieval context injection
- Configure context window optimization
- Design memory retention consolidation
- Enforce memory privacy audit compliance
- Knowledge check
- Summary

Deploy and govern enterprise agentic AI solutions on Azure

Implement CI/CD pipelines for multi-agent systems with GitHub Actions

- Introduction
- Design multi agent deployment pipelines
- Implement progressive deployment strategies
- Configure multi environment agent strategies
- Automate rollback procedures
- Knowledge check
- Summary

Secure multi-agent systems with Azure zero-trust architecture

- Introduction
- Apply zero trust identity agent networks
- Secure agent access jit workload identity
- Design authentication flows secrets lifecycle
- Prevent lateral movement agent networks
- Implement tenant context data isolation
- Validate tenant boundaries enforce encryption
- Configure compliance controls
- Knowledge check
- Summary

Scale responsible AI governance with Azure AI Content Safety and Microsoft Foundry

- Introduction
- Design fairness bias monitor
- Implement transparency explainability
- Configure privacy protection multi agent workflows
- Establish audit accountability frameworks
- Knowledge check
- Summary

Govern the enterprise agent lifecycle in Microsoft Foundry

- Introduction

- Design agent version approval workflows
- Implement usage quotas rate limiting
- Design cost allocation chargeback models
- Establish agent retirement deprecation processes
- Knowledge check
- Summary

Monitor, evaluate, and operate multi-agent AI solutions in Azure

Implement distributed observability for multi-agent solutions with OpenTelemetry

- Introduction
- Design distributed trace multi agent systems
- Implement structured log agent decisions
- Configure telemetry aggregation dashboards
- Build anomaly detection agent behavior
- Knowledge check
- Summary

Design evaluation frameworks for multi-agent solutions with Microsoft Foundry

- Introduction
- Define multi agent success metrics
- Implement model judge multi agent evaluation
- Design synthetic test datasets multi agent
- Build regression test agent drift
- Knowledge check
- Summary

Optimize multi-agent performance and cost in Microsoft Foundry

- Introduction
- Design model route agent ecosystems
- Implement multi level cache strategies
- Optimize token usage context management
- Balance quality cost latency tradeoffs
- Knowledge check
- Summary

Design human-in-the-loop approval workflows with Power Automate and Microsoft Teams

- Introduction
- Design confidence threshold escalation
- Implement approval workflows agent actions
- Build active learn human feedback
- Configure audit workflows regulated decisions
- Knowledge check
- Summary

Debug and respond to production multi-agent incidents in Azure

- Introduction
- Implement agent replay production debug
- Design root cause analysis agent failures
- Configure automated detection remediation
- Establish incident response postmortem processes
- Knowledge check
- Summary