

# Building Intelligent Agents with Microsoft Agents Framework

Duration: 32 hours

## Course Overview

This course provides an enterprise-focused deep dive into building intelligent, scalable AI agents using Microsoft Agent Framework as the core foundation. It begins with no-code and low-code agent creation through Microsoft Copilot Studio for rapid prototyping, then transitions to a code-first approach to reveal how agents are implemented, extended, and governed using the Microsoft Agent Framework.

Participants learn agent internals, workflows, observability, safety, and MCP-based tool integration, culminating in advanced multi-agent orchestration patterns. By the end of the course, learners can design and orchestrate production-ready AI agents across no-code, low-code, and fully coded Microsoft platforms with a clear end-to-end architectural understanding.

## Prerequisites

- Basic understanding of AI and Large Language Models (LLMs)
- Familiarity with Python or similar programming languages
- General awareness of Microsoft 365, Azure, or enterprise application environments
- Learners should have their own active access to Azure subscription and copilot studio.

## Course Contents

### Module 1: AI Agents – Foundations and Use Cases (Day 1)

- What is an AI agent
- Core components: model, memory, tools, workflows
- Differences between agents and traditional chatbots
- Enterprise use cases for AI agents

### Module 2: No-Code Agent Creation – Copilot Studio Overview (Day 1)

- Introduction to Microsoft Copilot Studio
- No-code and low-code agent creation philosophy
- Core concepts: copilots, topics/flows, triggers, channels
- Positioning Copilot Studio in the enterprise AI ecosystem

### **Module 3: Low-Code Agent Creation – Copilot Studio Hands-on Lab (Day 1)**

- Designing a simple conversational copilot
- Creating and managing conversation flows
- Publishing and testing copilots in supported channels
- Understanding the limitations of no-code and low-code approaches

### **Module 4: Code-Based Agents – Introduction to Microsoft Agent Framework (Day 2)**

- Why code-based agents are required
- Overview of Microsoft Agent Framework
- Relationship between Copilot Studio and Agent Framework
- Core agent and workflow capabilities

### **Module 5: Core Building Blocks of Agents (Day 3)**

- Model clients for chat completions and responses
- Agent threads and state management
- Context providers and agent memory
- Middleware for intercepting and extending agent behavior

### **Module 6: Agent Types, Configuration, and Safety (Day 4)**

- Agent types and behaviors
- Configuration options and runtime controls
- Instructions, guardrails, and safety mechanisms
- Designing enterprise-compliant agents

### **Module 7: Workflow Foundations – Core Concepts (Day 5)**

- Purpose and benefits of workflows
- Workflow components: executors, edges, workflows, events
- Workflow execution model
- Type safety and message routing

### **Module 8: Building Workflows (Day 6)**

- Building workflows using WorkflowBuilder
- Conditional routing and branching
- Dynamic execution paths
- Parallel execution and concurrency patterns

### **Module 9: Workflow Events and Observability (Day 7)**

- Workflow lifecycle events
- Executor and superstep events
- Monitoring and debugging workflows
- Observability best practices

**Module 10: MCP Fundamentals – Extending Agent Capabilities (Day 8)**

- Introduction to the Model Context Protocol (MCP)
- Why MCP is needed in agentic systems
- MCP core concepts: servers, clients, tools, resources

**Module 11: Using MCP Tools with Agents (Day 9)**

- Integrating MCP tools with Microsoft Agent Framework
- Connecting to MCP servers
- Invoking MCP tools from agents
- Designing agents that interact with external systems

**Module 12: Multi-Agent Orchestration and Advanced Patterns (Day 10)**

- Need for multi-agent systems
- Orchestration patterns: sequential, concurrent, hand-off, supervisor
- Checkpointing and long-running workflows
- Workflow composability and nesting

**Note:** There will be Demonstration shown and Handson Exercises given on all the modules during the course.