Designing & Implementing Agents and Pro Code Copilots using Microsoft Agent Framework and Azure AI Agent Service (AZAGENTS)

ID AZAGENTS **Price** 3,090.— €(excl. tax) **Duration** 5 days

Course Overview

This five-day class is crafted for software architects and engineers eager to master the end-to-end process of building, orchestrating, and integrating advanced copilots and agentic applications using Microsoft's latest frameworks and services.

The class begins by establishing a strong foundation in Copilots, Agents, and the Microsoft Foundry platform. You'll gain hands-on experience deploying large language models, working with the Foundry SDK, and developing robust agentic solutions through prompt engineering and Retrieval-Augmented Generation.

As we dive deeper, you'll explore the Foundry Agent Service—a fully managed, scalable environment for hosting agents—learning to connect knowledge sources, automate workflows, and leverage features like contextual knowledge graphs and Work IQ for enterprise-ready deployments.

The journey continues with a focus on orchestration and workflow design, as you work extensively with the Microsoft Agent Framework. Here, you'll configure agents for complex, multi-modal scenarios, implement persistent memory, and design sophisticated orchestration patterns with advanced observability and governance. Conversation management, middleware integration, and security are emphasized throughout, ensuring your solutions are both powerful and maintainable.

As the class progresses, you'll move into pro-code extensibility, building both declarative and custom agents, and preparing your solutions for seamless integration into Copilot Chat, Teams, or the channel of your choice. Everything comes together with the Microsoft Agents SDK, enabling you to connect Copilot Studio and Foundry agents, orchestrate multi-agent solutions, and publish intelligent agents across the Microsoft ecosystem.

Throughout, hands-on labs and demos in Python and C# ensure practical experience at every step. By the end, you'll be ready to implement, orchestrate, and integrate intelligent pro-code agents—empowering you to deliver scalable, enterprise-grade AI solutions with deep integration into the Microsoft Copilot ecosystem

Who should attend

- Software Architects & Engineers for Agentic AI Solutions
- Microsoft 365 & AI Pro-Code Developers

Prerequisites

- Python, C#, Typescript
- GitHub Account
- Microsoft 365 Development & Azure Development Skills helpful

Course Content

Module 1: Copilot & Agent Extensibility Fundamentals

Microsoft Foundry Essentials

- Copilots & Agent Frameworks in the Microsoft Ecosystem
- Hub-Based vs Foundry-Based Projects
- Deploying LLMs in Microsoft Foundry
- Model Router: Smart Model Selection
- Microsoft Foundry SDK & Microsoft.Extensions.AI
- Retrieval-Augmented Generation (RAG) and Azure AI Search
- Infrastructure as Code (IaC) using Azure Developer CLI

Agentic AI Fundamentals

- What Are Agents & Agentic AI?
- Prompt Engineering vs Context Engineering
- Knowledge Integration & Agentic RAG
- Deep Reasoning & ReAct (Reasoning and Acting)
- Function Calling, REST APIs & MCP Servers

- Evaluating Generative AI Performance
- Governance & Guardrails for Responsible Agents

Implementing Model Context Protocol Servers (MCP)

- MCP Core Concepts & Architecture
- Transports: STDIO vs HTTP Streaming
- Debugging with MCP Inspector
- Authentication & Security Best Practices
- Hosting MCP's in Azure Functions

Module 2: Build Agents using Foundry Agent Service

- Introduction to Foundry Agent Service
- Threads, Runs, Messages: Managing Inputs & Outputs
- Knowledge Integration: Foundry IQ, File Search, Azure AI Search, Bing Grounding ...
- Executing Actions with Tools: Code Interpreter, Azure Functions, OpenAPI & MCP
- Automating UI Tasks using Browser Automation and Computer Use
- Tracing, Observability & Performance Evaluation
- Implementing Autonomous Agents
- Agent-to-Agent Protocol (A2A) & Connected Agents

Module 3: Orchestrate Agents using Microsoft Agent Framework

Microsoft Agent Framework Basics & Concepts

- Introduction to the Agent Framework
- Chat Clients vs Agents: Key differences
- Agent types and configuration essentials
- Integrating Microsoft Foundry agents
- Threads, Conversation management & persistence
- Implementing long-term memory
- Governance, Middleware & Observability
- Multi-modal capabilities and structured outputs

Mastering Tools & Knowledge

- Built-in tools: Code Interpreter, File Search, Bing Grounding
- Using vector stores for memory and retrieval
- Adding custom tools and calling them from agents
- Integrating OpenAPI and MCP tools
- Function-calling middleware for advanced workflows

Orchestration & Workflows

- Introduction to Multi-Agent Orchestration
- Orchestration Patterns (Sequential, Concurrent, ...)
- Executor, Edges, Checkpoints
- Branching & Human-in-the-loop
- Observability & Workflow Visualization
- Use Agents inside workflows

Module 4: Microsoft Copilot Pro-Code Extensibility

Pro-Code Extensibility Fundamentals

- Declarative Agents vs Custom Engine Agents
- Teams Developer Portal, Microsoft 365 Agent Toolkit & DevTunnel
- Governance, Identity & Access Management

Copilot Connectors & APIs

- Designing and Implementing Copilot Connectors
- Copilot API Capabilities Overview
- Microsoft 365 Copilot Retrieval API

Declarative Agents for Microsoft 365

- Instructions & Conversation Starters
- Knowledge Sources: Web Search, SharePoint, Teams & Copilot Connectors
- Image Generation, Code Interpreter & API Plugins
- Enhancing UI with Adaptive Cards

Introduction to Custom Engine Agents

- Use Cases for Custom Engine Agents
- Microsoft Agent SDK & Teams AI Library
- Exploring Microsoft Agents Tookit Playground
- Tools, Knowledge Integration

Module 5: Agent Integration using Microsoft Agents SDK

- Overview Microsoft Agents SDK
- Connecting Copilot Studio- & Microsoft Foundry Agents
- Orchestrate Multi-Agent-Solutions using Microsoft Agent Framework
- Publishing Agentic AI Solutions to Copilot Chat and Teams
- Front-End Integration using Agent–User Interaction (AG-UI) Protocol

About Fast Lane

Fast Lane is a global, award-winning specialist in technology and business training as well as consulting services for digital transformation. As the only global partner of the three cloud hyperscalers- Microsoft, AWS and Google- and partner of 30 other leading IT vendors, Fast Lane offers qualification solutions and professional services that can be scaled as needed. More than 4,000 experienced Fast Lane professionals train and advise customers in organizations of all sizes in 90 countries worldwide in the areas of cloud, artificial intelligence, cyber security, software development, wireless and mobility, modern workplace, as well as management and leadership skills, IT and project management.

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Germany
Fast Lane Institute for Knowledge Transfer GmbH
Tel. +49 40 25334610
info@flane.de / www.flane.de

Austria
ITLS GmbH
(Partner of Fast Lane)
Tel. +43 1 6000 8800
info@itls.at / www.itls.at

Switzerland
Fast Lane Institute for Knowledge Transfer (Switzerland) AG
Tel. +41 44 8325080
info@flane.ch / www.flane.ch