

UC SANTA BARBARA  
Professional and  
Continuing Education



# Agentic AI<sup>\*\*\*</sup> for Leaders

## Systems, Design & Impact Program



# Why Agentic AI Matters Now

AI has moved beyond experimentation. Companies are now deploying it at scale to boost productivity and reinvent products—creating urgent demand for professionals who can lead, not just observe, this shift.

The next edge is agentic AI and multi-agent systems—AI that can plan, decide, and act across complex workflows. Organizations are rapidly increasing investment in AI agents, reshaping how products are built and how work gets done. This is creating a powerful opportunity for mid to senior product managers and tech leaders, as roles that combine product thinking with agentic AI are becoming some of the most sought-after and best-compensated in the AI ecosystem.

## By Numbers

**66%**

of companies using AI agents report measurable productivity gains

**88%**

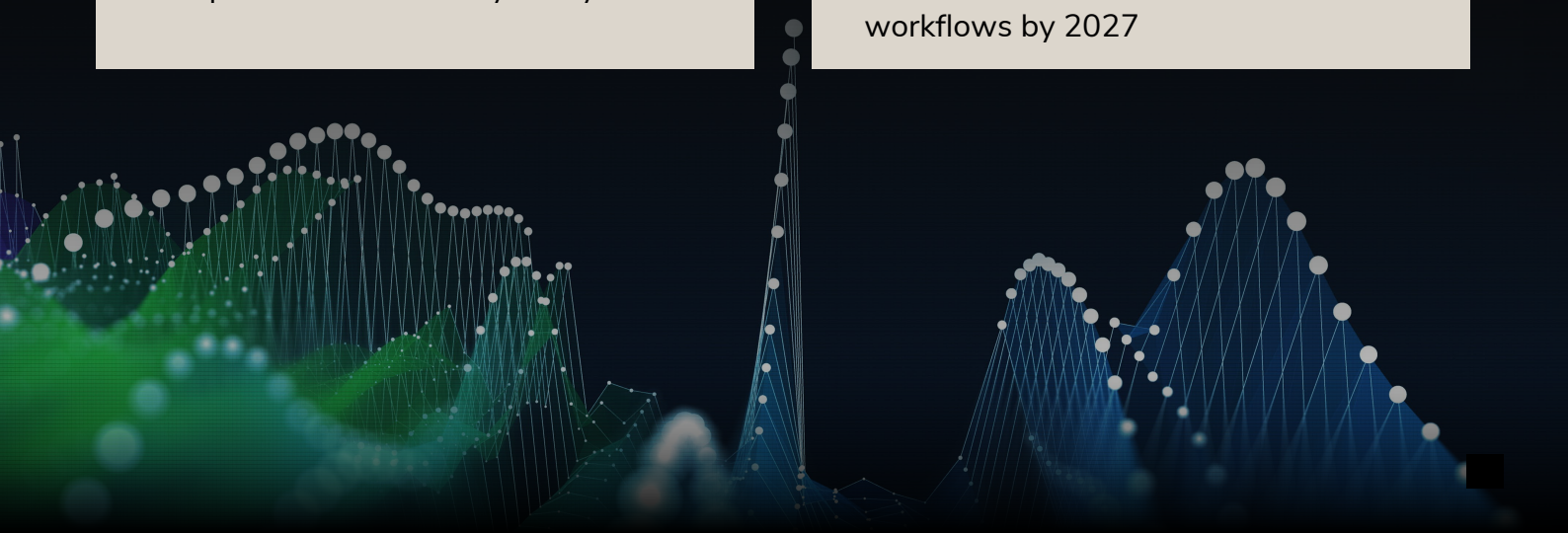
of executives plan to increase AI budgets by May 2026 due to agentic AI

**24% → 67%**

Organizations where AI agents take independent action today vs. by 2027

**28% → 57%**

Executives expecting autonomous decision-making from agentic AI in workflows by 2027



# About the Program

The Agentic AI for Leaders: Systems, Design & Impact program is built to help you navigate the rise of agentic AI. It blends UCSB's globally recognized academic reputation with Microsoft's deep expertise in AI technologies and Simplilearn's immersive learning model.

You'll move **from building interfaces to designing intelligent behaviors**. The curriculum covers agentic frameworks, planning systems, multi-agent coordination, and prompt engineering, and gives you the chance to work on real-world projects using industry tools. By the end, you'll be equipped to orchestrate multi-agent systems, shape AI-native product strategies, and lead AI-driven transformation in your organization.

Program	With UC Santa Barbara Professional and Continuing Education, delivered by Simplilearn
Industry Partner	 Microsoft
Duration of the Program	10 weeks   6–8 hours per week
Mode of Delivery	Live Virtual Classes (LVC) with access to recordings on LMS + OSL for Microsoft modules
Delivered by	Live classes by industry experts and masterclass by Microsoft-certified trainers
Real-World Learning	40+ demos, 10+ guided practices, 25+ tools & frameworks, 7 hands-on course-end projects, and 1 capstone – spanning across analytics agents, multi-agent orchestration, workflow automation, full-stack MVP deployment
Eligibility	18+ with a high school diploma, a basic understanding of programming concepts, and ideally 4+ years of work experience



# Learning Path

## Core Courses

## Learning Hours

	Python Refresher With AI (Optional)	12 Hrs
	Foundations of AI & Agentic AI	3 Hrs
	Generative AI Tech Stack and Prompt Engineering	6 Hrs
	LLM Internals & Planning Systems	6 Hrs
	Multi-Agent Ecosystems (I)	6 Hrs
	Multi-Agent Ecosystems (II)	9 Hrs
	Model Context & Tooling Protocol	6 Hrs
	Metrics, GTM & ROI	3 Hrs
	Agentic UX Design & Transparency	3 Hrs
	Dev Tools & Product Readiness	3 Hrs
	Develop AI Agents on Azure (Microsoft)	8 Hrs
	Capstone: Product Strategy Simulation	6 Hrs

## Elective Courses

	Develop Generative AI Apps in Azure (Microsoft)	7.5 Hrs
	Masterclass on Agentic AI Solutions Using Copilot Studio and AutoGen	2 Hrs

## COURSE 1

# Python Refresher With AI (Optional)

This course revisits Python programming essentials tailored for AI/ML applications. It covers core programming constructs, environment setup including IDEs and cloud platforms, data structures, control flows, OOP basics, file handling, and introduces AI-powered code generation tools like GitHub Copilot. Practical exercises focus on real-world data manipulation and culminate in a capstone project comparing traditional and AI-assisted coding approaches, preparing learners to effectively integrate Python skills with evolving AI workflows.

### Guided Practices:



**Building Employee Financial Insights With Python:** Build a Python system to process employee salary data using variables, data types, operators, inputs/outputs, and error handling while following coding best practices to generate basic financial insights



**Storing and Analyzing Customer Feedback in Python:** Store, organize, and analyze customer feedback using Python lists, tuples, dictionaries, and sets. Use loops and conditionals to examine records and uncover meaningful insights



**Creating Object-Oriented Programs in Python:** Create reusable functions and classes in Python, apply single-level inheritance, and build a working script that demonstrates core object-oriented concepts with clean, efficient design



**Building a Number-Guessing Game With GitHub Copilot:** Build a number-guessing game in Python using GitHub Copilot in VS Code. Use inline comments and docstrings to guide code generation and produce a clean, fully functional game

## Demos:

- ✓ Installing and setting up VS Code
- ✓ Getting started with Google Colab
- ✓ Storing user information using data types
- ✓ Working with lists (append, extend, pop)
- ✓ Working with dictionaries (get, keys, values, items)
- ✓ Understanding if-elif and loop structures
- ✓ Matching function arguments, including arbitrary arguments
- ✓ Using lambda, map, filter, and reduce
- ✓ Demonstrating inheritance
- ✓ Demonstrating error handling
- ✓ Demonstrating prompt writing and analyzing AI-generated code
- ✓ Installing Jupyter Notebook using Anaconda
- ✓ Writing and running the first Python program
- ✓ Using Python operators for numerical comparisons
- ✓ Working with tuples and tuple unpacking
- ✓ Working with sets and set operations
- ✓ Understanding comprehensions
- ✓ Demonstrating return vs yield (generators)
- ✓ Implementing a class with attributes and methods
- ✓ Demonstrating file handling (read/write)
- ✓ Installing GitHub Copilot in VS Code, PyCharm, or Jupyter
- ✓ Debugging and optimizing AI-generated functions

## COURSE 2

# Foundations of AI & Agentic AI

Introducing the Learn > Build > Deploy framework, this course covers AI hierarchy distinctions (AI, ML, DL, GenAI, Agentic AI), transformer architectures, and autonomous AI agents. Topics include key papers like "Attention is All You Need," CoT prompting, ReAct frameworks, and a 4-layer GenAI stack analogy. It establishes foundational knowledge critical to technical product management of AI systems with an emphasis on theoretical and applied agentic AI concepts.

### Skills Developed:

- ✓ AI Literacy
- ✓ GenAI Fundamentals
- ✓ Transformer Understanding
- ✓ Prompting Techniques



## COURSE 3

# Generative AI Tech Stack and Prompt Engineering

This deep dive explores the 4-layer GenAI technology stack—Infrastructure, Model, Orchestration, and Application—with an emphasis on scalability, cost, and product lifecycle management. Infrastructure covers cloud platforms and vector databases; Model focuses on foundation models and fine-tuning; Orchestration surveys agent frameworks and workflows; Application addresses low-code prototyping and UX design principles. The course integrates prompt engineering mastery, including zero-shot, CoT, and ReAct techniques with hands-on demos.

### Tools and Frameworks Covered:

 **Lovable** **emergent** **LangChain** **crewAI** **AutoGen** **LangGraph**

### Skills Developed:

- ✓ GenAI Tech Stack
- ✓ Vector Databases
- ✓ AI UX Design
- ✓ Agent Orchestration
- ✓ Low-Code Prototyping

## COURSE 4

# LLM Internals & Planning Systems

Focusing on PM productivity with AI, this course teaches prompt engineering principles and planning systems using LangChain and function calling APIs. It includes live sessions building Q&A bots integrating APIs, planning workflows with agents, and advanced prompt strategies to optimize interaction with language models. Labs guide the development of multi-step agents and contextual tool integration, enhancing practical skills in agent-based product development.

### Guided Practices:



**Prototyping Product Ideas With AI Tools:** Rapidly prototype product ideas using AI tools like Lovable, Uizard, and Firebase Studio to explore how AI accelerates value definition, UI creation, and feature simulation



**Building a Multi-Agent System for Feature Prioritization:** Build a LangChain-powered multi-agent system using Azure OpenAI to simulate feature prioritization by orchestrating domain agents to score features and generate a unified priority list

### Demos:

- ✓ Debugging prompt failures in product feature summaries
- ✓ Applying CoT and ReAct prompting for drafting user stories and analyzing problems
- ✓ Building a RAG-powered FAQ agent with custom knowledge
- ✓ Building a finance Q&A agent using LangChain

## Course-End Project:



### Building a RAG Pipeline With PDF Retrieval

Build a Retrieval-Augmented Generation pipeline by chunking PDF documents, creating embeddings, and using semantic vector search to retrieve relevant information from real-world content

## Tools and Frameworks Covered:

 **Lovable**

**emergent**

 **ChatGPT**

**cren.ai**

 **LangGraph**

 **LangChain**

  
**A2A**

**Agentic RAG  
Design Frameworks**

## Skills Developed:

- ✓ Planning Systems
- ✓ RAG Pipeline Design
- ✓ Multi-Step Reasoning
- ✓ Agent Workflow Design
- ✓ Tool Integration

## COURSE 5

# Multi-Agent Ecosystems (I)

This course explores advanced retrieval-augmented generation (RAG) systems and multi-agent architectures through hands-on implementation with CrewAI and LangGraph. It details agent collaboration patterns, role-based architectures using YAML, memory strategies, and real-world orchestration frameworks. Learners build modular multi-agent teams focusing on scalability, state management, and autonomous information synthesis. Deliverables include pitches advocating modular agent architectures.

### Guided Practices:



**Generating Product Specs With MetaGPT:** Use MetaGPT's multi-agent system to generate a complete product specification from a single business prompt and observe how coordinated agent roles enable structured product development



**Orchestrating AI Agents With LangGraph:** Orchestrate cross-framework AI agents using the A2A protocol with LangGraph to understand how modular agents share context, collaborate on research tasks, and produce unified outputs

### Demos:

- ✓ Understanding the Anthropic Research Agent
- ✓ Building a CrewAI multi-agent system with RAG (chatbot)
- ✓ Executing serial and parallel workflows using CrewAI agents

### Discussion:

- ✓ Exploring LangGraph and agent-to-agent (A2A) interactions

### Course-End Project:



#### Building an Agentic RAG Router System

Design and implement an Agentic RAG system with role-based agents. Use a Router Agent and Retriever Agent to route queries across PDF vector search or web tools and generate accurate, source-grounded answers

### Tools and Frameworks Covered:

Agentic RAG  
Design Frameworks

### Skills Developed:

- ✓ Multi-Agent Design
- ✓ RAG Architecture
- ✓ Memory Strategies
- ✓ Agent Collaboration
- ✓ Workflow Orchestration
- ✓ Analytical Reasoning

## COURSE 6

# Multi-Agent Ecosystems (II)

Building on foundational multi-agent knowledge, this course delves into enterprise-grade agent orchestration using Microsoft AutoGen and n8n workflow automation. It covers communication protocols, database integration, and production deployment strategies. Projects include developing marketing agent pipelines with attention to scalability, performance, security, and compliance. Visual workflows and protocol deep dives support mastery of complex distributed agent ecosystems.

### Guided Practices:



**Building a Multi-Agent Support Triage System:** Build a multi-agent AutoGen workflow that triages support tickets by coordinating role-based agents and a planner to deliver transparent, data-driven prioritization decisions



**Designing Human-in-the-Loop Publishing Workflows:** Create an n8n workflow that combines agentic content generation with human review, routing drafts through approval and SEO enhancement for controlled, safe publishing

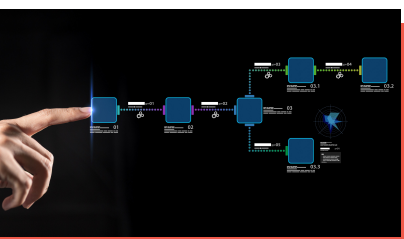
### Demos:

- ✓ Installing and running AutoGen locally
- ✓ Response format negotiation for multi-agent communication
- ✓ Integrating n8n for automated customer support ticket routing
- ✓ Using AutoGen for autonomous internal document QA & policy compliance
- ✓ Implementing AutoGen agent chain for automated code testing & debugging

### Discussion:

- ✓ A2A messaging, optimization, and reviews

### Course-End Project:



#### Building AI-Powered LinkedIn Automation With n8n

Design an AI-powered content automation system using n8n and an AutoGen-style microservice to ideate, draft, review, and publish LinkedIn posts with guardrails for scale and consistency

### Tools and Frameworks Covered:

AutoGen	n8n	docker	Phoenix Framework
Gmail	LangSmith	Google Docs	mongoDB
asana	slack	PostgreSQL	Pinecone
A2A	Agentic RAG Workflow Patterns		

### Skills Developed:

- ✓ Agent Orchestration
- ✓ Multi-Agent Communication
- ✓ Compliance & Security
- ✓ Workflow Automation
- ✓ Database Integration

## COURSE 7

# Model Context & Tooling Protocol

This course introduces the Model Context Protocol (MCP) for integrating and standardizing AI tools. Topics include structured context binding, interoperability standards, JSON schema design, secure tool hosting, and memory persistence. Labs develop contextual AI agents chaining outputs across tools with authentication and performance optimization. Emphasis is on enterprise readiness, security best practices, and tool discoverability through standardized protocols.

### Demos:

- ✓ Building a MarketIntel MCP server for market research
- ✓ Building a research agent workflow with MCP server in n8n

### Discussion:

- ✓ How would you register a market research tool with MCP?

### Tools and Frameworks Covered:



### Skills Developed:

- ✓ Context Binding
- ✓ Schema Definition
- ✓ Performance Optimization
- ✓ Tool Interoperability
- ✓ Secure Tool Hosting

## COURSE 8

# Metrics, GTM & ROI

Offering a comprehensive framework, this course teaches measurement of AI agent performance using OKRs, key indicators like success rate and latency, and ROI calculations. It covers observability tooling with LangSmith and Phoenix, real-time logging, and conversational analysis. Business strategy topics include pricing, go-to-market planning, and deployment of agent MVPs with analytics dashboards. Practical instrumentation and monitoring equip learners for operational excellence.

### Demos:

- ✓ Setting up LangSmith tracing on a simple AI agent
- ✓ A/B testing AI responses with prompt variants
- ✓ Creating a Lean Canvas on Miro (collaborative exercise)

### Tools Covered:



### Skills Developed:


- ✓ Agent Metrics Analysis
- ✓ Observability Setup
- ✓ A/B Testing
- ✓ ROI Evaluation
- ✓ GTM Strategy
- ✓ Agent Monitoring

## COURSE 9

# Agentic UX Design & Transparency

Centering user experience for AI products, this course covers interaction design patterns for agentic UX, including flexible, probabilistic flows, ambiguity handling, and human-in-the-loop checkpoints. It addresses ethical risks such as hallucinations and bias and teaches guardrail implementations and transparency techniques such as confidence disclosures and explainability interfaces. Learners create complete UX prototypes emphasizing trust, user control, and fail-soft design.

### Guided Practice:

 **Designing Proactive Agent Behaviors in Figma:** Design a proactive agent confirmation flow in Figma that presents AI actions, reasoning, and confidence, enabling users to approve or override decisions through a transparent interface

### Demos:

- ✓ Creating a chat-style prototype in Figma
- ✓ Designing an interface with AI-suggested actions and user control buttons
- ✓ Creating a reasoning tooltip and a planned action in Figma
- ✓ Designing human-in-the-loop approval and feedback interfaces in Figma

### Course-End Project:



#### Designing an Agentic UX Trust Prototype

Design a trust-focused Agentic UX prototype for a financial advisor AI that previews actions, explains reasoning, and enables override or cancellation, with LangChain simulating agent planning and logic

### Tool Covered:



### Skills Developed:

- ✓ UX Prototyping
- ✓ AI-First Design
- ✓ Human-in-the-Loop Design
- ✓ UX Design for AI Risk Mitigation
- ✓ UX for Human & AI Interaction

## COURSE 10

# Dev Tools & Product Readiness

Focused on deployment and live operations, this course examines cloud vs edge hosting, serverless and containerized environments, and model hosting strategies. It includes hands-on Firebase and n8n automation workflows, feedback and testing system integrations for user insights, alert configurations for monitoring, and infrastructure-as-code introductions with Terraform and Pulumi. The course prepares learners for scalable, maintainable AI product readiness.

### Guided Practice:

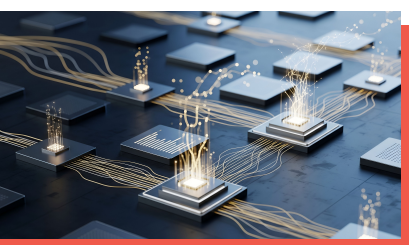


**Building a Full-Stack Agent MVP in Colab:** Build a full-stack agent MVP in Google Colab using Python, ipywidgets, and the OpenAI API to create a chat interface, log user interactions, and capture feedback for continuous improvement

### Demos:

- ✓ Log and visualize user-agent interaction events in Firestore
- ✓ Embed a Lovable feedback widget and track Firebase Analytics events
- ✓ Run a self-hosted open-source LLM locally using Ollama

### Course-End Project:



#### Designing a Multi-Agent Workflow Planner

Design a multi-agent workflow planner for a startup accelerator where role-based agents collaborate to complete tasks like generating a pitch deck outline using coordinated planning and feedback loops

### Tool Covered:



**Hugging Face**

### Skills Developed:

- ✓ Workflow Automation
- ✓ Event Logging
- ✓ Infrastructure-as-Code
- ✓ Model Hosting
- ✓ Product Readiness

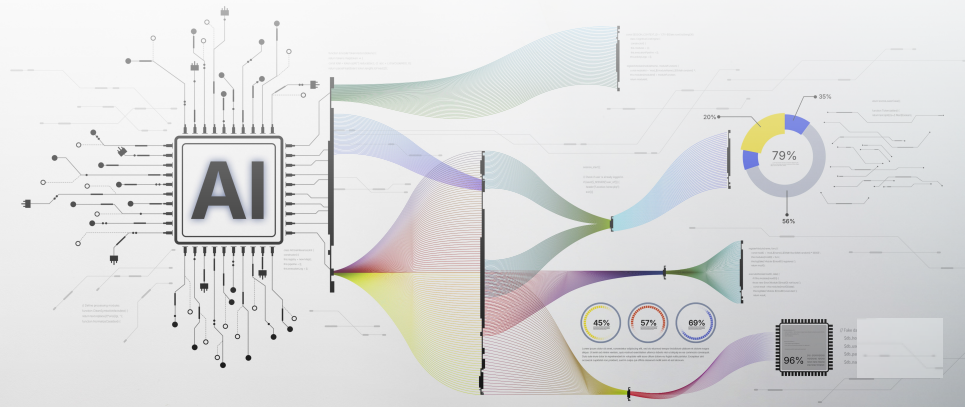
## COURSE 11

# Develop AI Agents on Azure (Microsoft)

This course focuses on building AI agents leveraging Microsoft Azure's cloud infrastructure and toolset. It covers Azure-specific frameworks, deployment workflows, security integration, and scalable orchestration techniques. Learners gain hands-on experience developing and hosting AI agents in the Azure ecosystem with attention to enterprise-grade reliability and compliance.

### Skills Developed:

- ✓ Deployment on Azure
- ✓ Security Integration
- ✓ Enterprise Compliance
- ✓ Cloud Orchestration
- ✓ Scalable Agent Design
- ✓ Cloud Architecture



## COURSE 12

# Capstone - Project Strategy Simulation (With Exclusive Mentor-Led Project Support)

The capstone integrates multi-agent system design and go-to-market planning through a production-grade project building a 4-agent market research and GTM framework using n8n and CrewAI with MCP integration. It emphasizes business strategy development, including Lean Canvas, pricing models, and acquisition strategies, alongside instrumented agent performance data and real-world chatbot deployment. This synthesis project prepares learners for practical AI product leadership.

### Tools and Frameworks Covered:



**MCP**

### Skills Developed:

- ✓ Multi-Agent System Design
- ✓ GTM Planning
- ✓ Performance Analytics
- ✓ MCP Integration
- ✓ Pricing Strategy
- ✓ Real-World Deployment

## Elective Courses

# Develop Generative AI Apps in Azure (Microsoft)

This course prepares you to build AI solutions on Azure using Microsoft Foundry. You'll plan and set up AI environments, select and deploy models from the model catalog, build apps with the Foundry SDK, use prompt flow, develop RAG solutions with your data, fine-tune models, apply responsible AI practices, and evaluate generative AI performance using Azure AI Studio tools.



## Elective Courses

# Masterclass on Agentic AI Solutions Using Copilot Studio and AutoGen

This masterclass offers exposure to designing and deploying agentic AI solutions using modern low-code and open-source frameworks. Delivered through a live session led by a Microsoft-certified trainer, the masterclass showcases how Copilot Studio and AutoGen can accelerate development and enable rapid deployment of agentic systems in real-world business environments.



*\*\*Please note: The program curriculum is subject to change to ensure it always reflects the latest, in-demand topics.\*\**

# About UC Santa Barbara Professional & Continuing Education

The University of California, Santa Barbara is a top-ranked public research university, consistently recognised among the top 15 public universities in the U.S. UCSB is home to 8 Nobel Laureates, 10 national research centres and institutes, and 34 National Academy of Engineering members, reflecting its strong academic excellence, innovation, and real-world impact. UC Santa Barbara Professional and Continuing Education (PaCE) empowers professionals and lifelong learners with essential skills through flexible certificate programs, professional courses, workshops, and seminars across diverse fields such as business, technology, and more.

UCSB PaCE is collaborating with Simplilearn to deliver industry-aligned, online professional non-credit certificate programs. This collaboration combines UCSB's globally recognised academic reputation with Simplilearn's immersive learning model, featuring live virtual classes, applied projects, and career-focused curriculum. Learners benefit from studying with a top-ranked UC institution while gaining job-ready skills and career support designed to drive immediate and measurable professional impact.

**#8**

Public University in  
the US

Forbes Magazine

**8**

Nobel Laureates  
amongst UCSB faculty

**#12**

for Best Career  
Placement Among  
Public Schools

Princeton Review's 2025



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