



# AI+ Finance Agent Specialty (1 Day)

## Program Detailed Curriculum

### Executive Summary

The AI+ Finance Agent Specialty Certification is designed for finance professionals, technologists, and AI enthusiasts who aim to build autonomous financial AI agents. This course goes beyond theoretical AI applications in finance by equipping participants with the skills to design, develop, and deploy AI agents for real-time fraud detection, credit scoring, robo-advisory, algorithmic trading, risk analytics, and regulatory compliance.

Through hands-on exercises, prompt engineering, and real-world financial case studies, learners will gain the expertise to create intelligent systems that enhance decision-making, increase operational efficiency, and ensure regulatory alignment.

### Course Prerequisites

- Basic understanding of financial workflows or finance-related domains (e.g., banking, investment, risk management, compliance)
- Interest in automation, AI, or financial innovation
- No prior coding experience required (coding templates provided for hands-on labs)
- Familiarity with digital tools (e.g., spreadsheets, dashboards, analytics platforms) is helpful but not mandatory
- Curiosity about AI technologies such as machine learning, natural language processing, and their impact on the finance industry.

#### Module 1

### Introduction to AI Agents in Finance

---

#### 1.1 Basic Understanding AI Agents in Finance vs Traditional Financial Automation

---

#### 1.2 The Evolution of AI Agents in Financial Services

---

#### 1.3 Overview of Different Types of AI Agents in Finance

---

#### 1.4 Importance of Agent Autonomy and Task Delegation in Financial Settings

---

#### 1.5 Key Differences Between AI Agents in Finance and Traditional Automation

---

**1.6 Hands-On Activity:** Exploring AI Agents in Finance (This hands-on activity will introduce participants to AI agents in finance, exploring their evolution, types, and key differences from traditional automation, with a focus on autonomy and task delegation)

---

## Module 2

### Building and Understanding AI Agents in Finance

---

2.1 Architecture of AI agents in finance

---

2.2 Tools and libraries for agent development

---

2.3 AI agents vs. static models

---

2.4 Overview of agent lifecycle

---

**2.5 Real-World Use Case:** Customer support agents in banks for handling KYC, FAQs, and transaction disputes.

---

**2.6 Case Study:** Bank of America's Erica, a virtual financial assistant that handles 1+ billion interactions using predictive AI.

---

**2.7 Hands on Activity:** Building and Understanding AI Agents in Finance (This hands-on activity will help participants understand the architecture, tools, and lifecycle of AI agents in finance, exploring real-world use cases like customer support agents in banking)

---

## Module 3

### Intelligent Agents for Fraud Detection and Anomaly Monitoring

---

3.1 Supervised/unsupervised ML for fraud detection

---

3.2 Pattern analysis & behavioral profiling

---

3.3 Real-time monitoring agents

---

**3.4 Real-World Use Case:** AI agents monitoring transaction behavior and flagging anomalies for real-time fraud detection in digital wallets.

---

**3.5 Case Study:** PayPal's AI system uses graph-based anomaly detection agents to flag 0.33% of all transactions for fraud with 99.9% accuracy.

---

**3.6 Hands-On Activity:** Intelligent Agents for Fraud Detection and Anomaly Monitoring  
(This hands-on activity will introduce participants to how AI agents use machine learning, pattern analysis, and real-time monitoring to detect fraud and anomalies, with real-world use cases like digital wallet monitoring.)

---

## Module 4

### AI Agents for Credit Scoring and Lending Automation

---

**4.1 Feature generation from non-traditional credit data**

---

**4.2 Explainability (XAI) in credit decisions**

---

**4.3 Bias mitigation in lending agents**

---

**4.4 Real-World Use Case:** Agents assessing new-to-credit individuals using transaction and mobile data.

---

**4.5 Case Study:** Upstart's AI-based lending platform approved by CFPB showed 27% increase in approval rate and 16% lower APRs for borrowers.

---

**4.6 Hands-On Activity:** AI Agents for Credit Scoring and Lending Automation  
(This hands-on activity will explore how AI agents use non-traditional credit data, explainability, and bias mitigation to automate credit scoring and lending decisions, with real-world examples like assessing new-to-credit individuals.)

---

## Module 5

### AI Agents for Wealth Management and Robo-Advisory

---

**5.1 Personalization using profiling agents**

---

**5.2 Portfolio rebalancing algorithms**

---

**5.3 Sentiment-aware investing**

---

**5.4 Real-World Use Case:** AI agent adjusting user portfolio allocations weekly based on financial goals and market trends.

---

**5.5 Case Study:** Wealthfront's Path agent uses financial behavior modeling to recommend personalized savings goals and investment paths.

---

**5.6 Hands-On Activity:** AI Agents for Wealth Management and Robo-Advisory  
(This hands-on activity will guide participants through the use of AI agents in wealth management, focusing on personalization, portfolio rebalancing, and sentiment-aware investing. Participants will explore real-world use cases like AI agents adjusting portfolios based on market trends and financial goals, with insights from Wealthfront's Path agent for personalized financial planning.)

---

## Module 6

### Trading Bots and Market-Monitoring Agents

---

**6.1 Reinforcement learning in trading agents**

---

**6.2 Predictive modeling using historical data**

---

**6.3 Risk-reward threshold management**

---

**6.4 Real-World Use Case:** AI trading agents performing arbitrage between crypto exchanges.

---

**6.5 Case Study:** Renaissance Technologies utilizes AI to automate short-hold trades, generating consistent alpha via adaptive trading bots.

---

**6.6 Hands-On Activity:** AI Trading Bots and Market-Monitoring Agents  
(This hands-on activity will introduce participants to AI-driven trading bots, exploring the use of reinforcement learning, predictive modeling, and risk-reward management. Participants will explore real-world use cases like arbitrage trading between crypto exchanges and understand how Renaissance Technologies uses AI to automate trading for consistent returns.)

---

## Module 7

### NLP Agents for Financial Document Intelligence

---

**7.1 LLMs in earnings call and filings analysis**

---

**7.2 AI summarization and event detection**

---

**7.3 Voice-to-text and key-point extraction**

---

**7.4 Real-World Use Case:** An NLP agent that parses quarterly earnings calls and flags forward-looking statements automatically.

---

**7.5 Case Study:** BloombergGPT processes and tags over 30,000 financial documents a day for market-moving insights.

---

**7.6 Hands-On Activity:** AI Agents for Wealth Management and Robo-Advisory  
(This hands-on activity will guide participants through the use of AI agents in wealth management, focusing on personalization, portfolio rebalancing, and sentiment-aware investing. Participants will explore real-world use cases like AI agents adjusting portfolios based on market trends and financial goals, with insights from Wealthfront's Path agent for personalized financial planning.)

---

## Module 8

### Compliance and Risk Surveillance Agents

---

**8.1 AI for AML and KYB (Know Your Business)**

---

**8.2 Regulation-aware rule modelling**

---

**8.3 Transaction graph analysis**

---

**8.4 Real-World Use Case:** Agent tracking suspicious cross-border money transfers in real-time across multiple accounts.

---

**8.5 Case Study:** HSBC uses Quantexa's AI agents to trace AML networks, increasing suspicious activity detection by 30%.

---

**8.6 Hands-On Activity:** Compliance and Risk Surveillance Agents in Financial Systems  
(This hands-on activity will explore how AI agents assist in anti-money laundering (AML) and Know Your Business (KYB) processes, focusing on real-time surveillance, transaction graph analysis, and regulation-aware rule modelling.)

---

## Module 9

### Responsible, Fair & Auditable AI Agents

---

**9.1 Governance frameworks for AI in finance (RBI, EU AI Act)**

---

**9.2 Transparency and auditability in decision logic**

---

**9.3 Fairness and explainability**

---

**9.4 Real-World Use Case:** Auditable AI agent logs used during internal policy audits to ensure fair lending practices.

---

**9.5 Case Study:** Wells Fargo implemented internal AI fairness reviews for lending bots post regulatory scrutiny.

---

**9.6 Hands-On Activity:** Responsible, Fair & Auditable AI Agents in Finance  
(This hands-on activity will guide participants through the importance of governance frameworks, transparency, and fairness in AI-driven finance, with a focus on creating auditable AI systems for fair lending practices and regulatory compliance.)

---

## Module 10

### World Famous Case Studies

---

#### 10.1 Case Study 1: JPMorgan's COiN Platform

- **Use:** AI agent for reviewing commercial loan agreements
  - **Outcome:** Reviewed 12,000 documents in seconds (manual time = 360,000 hours/year)
  - **Key Value:** Reduced legal and compliance risk, increased speed 100x
- 

#### 10.2 Case Study 2: AI in Fraud Detection - PayPal's Decision Intelligence

- **Use:** AI agent for real-time fraud detection in online transactions
  - **Outcome:** PayPal uses AI-powered fraud detection agents to monitor over 20 million transactions per day, identifying fraudulent activities with an accuracy rate of 99.9%.
  - **Key Value:** Enhanced fraud detection, reduced chargeback rates, and faster transaction processing, leading to over \$4 billion in fraud prevention savings annually.
- 

#### 10.3 Case Study: AI-Driven Credit Scoring - Upstart's Lending Platform

- **Use:** AI agents for assessing creditworthiness using alternative data sources
  - **Outcome:** Upstart, a leading AI-based lending platform, processes millions of applications and provides approval in under 5 minutes.
  - **Key Value:** Increased approval rates by 27%, reduced loan default rates by 16%, and provided fairer lending opportunities for underserved populations.
-

## Capstone Project

**Title:** Designing a Multi-Agent Financial Assistant

**Goal:** Build a prototype AI agent ecosystem that handles user queries, recommends investments, monitors fraud, and assists with budgeting.

**Tasks:**

- Define 3 agents with distinct roles
  - Use real/synthetic data for model input
  - Design workflows with GPT or Python-based API
  - Ensure compliance, transparency, and customer feedback loop
-