**Generative AI and AI in Networking Fundamentals**

**Duration:** 16 Hours (2 Days)
**Labs:** Hands-on using Open-Source Tools, Microsoft Learn Resources & Cloud-based AI Platforms
**Pre-requisite:** No prior AI experience required

---

**Module 01: Foundations of AI, Machine Learning, and Data Science**

- Introduction to Artificial Intelligence and Machine Learning
- Understanding Data Science Workflow
- Types of Machine Learning: Supervised, Unsupervised, and Reinforcement
- Applying ML Concepts to Networking (Predictive Maintenance & Traffic Analysis)

**Module 02: Introduction to Generative AI**

- What is Generative AI and How It Works
- Predictive vs. Generative Models
- Transformer Architecture and LLM Overview (GPT, Claude, Gemini)
- Real-World Applications of GenAI in Networking and IT Operations

**Module 03: Industry Trends and Model Use Cases**

- What's Happening Around in Generative AI
- Key Industry Models and Their Strengths
- Responsible AI and Ethical Considerations
- Networking-Specific Use Cases: Ticket Summarization, Anomaly Detection, Configuration Generation

---

**Module 04: Prompt Engineering Techniques**

- Understanding Prompts and Their Role in GenAI
- Types of Prompts: Zero-shot, Few-shot, and Chain-of-Thought
- Best Practices for Crafting Prompts

- Hands-on Exercises: Prompts for Network Log Summaries and Automated Configuration Suggestions

**Module 05: Exploring AI Tools**

- Introduction to Comet Browser for Experiment Tracking
- Using NotebookLM for Personalized Knowledge Summarization
- Building Agents using AWS PartyRock Playground
- Practical Labs integrating AI tools with Networking Scenarios

**Module 06: AI in Networking Applications**

- AI for Network Optimization and Traffic Forecasting
- Network Security and Intrusion Detection using AI Models
- Intent-Based Networking and Predictive Maintenance
- Microsoft Learn Labs: AI in Azure Networking and Infrastructure Services

---