

**Introduction to Generative AI for Developers**

**Course Number:** AI-120WA
**Duration:** 3 days

**Overview**

This Introduction Generative AI (GenAI) training teaches developers how to build intelligent, scalable applications using GenAI and large language models (LLMs).

**Prerequisites**

* Practical experience in Python (at least 6 months):
	+ Data Structures, Functions, Control Structures
	+ Exception Handling, File I/O, async, concurrency (recommended)
* Practical experience with these Python libraries: Pandas, NumPy, and scikit-learn
	+ Understanding of Machine Learning concepts - regression, clustering, classification
	+ ML Algorithms: Gradient Descent, Linear Regression
* Loss Functions and evaluation metrics

**Materials**

All Generative AI training students receive comprehensive courseware.

**Software Needed on Each Student PC**

All attendees must have a modern web browser and an Internet connection.

**Objectives**

* Gain a deep understanding of LLM fundamentals to make informed decisions for your organization's AI strategy
* Craft high-impact prompts to unlock the full power of LLMs and achieve precise results
* Bolster your development process with LLM-powered tools that streamline workflows and elevate code quality
* Confidently access and integrate both closed-source and open-source LLMs into your projects
* Customize LLMs for tailored solutions that drive innovation and efficiency

**Outline**

* Introduction
* LLM Foundations
	+ Introduction to Generative AI for Software Development
	+ Generative Models and their Use Cases
	+ Transformer architecture and its impact on LLM performance
	+ LLM Training Process - pre-training, fine-tuning, and reinforcement learning
	+ Exploring Real-World LLM Applications
* Speaking to LLMs: Prompt Engineering
	+ Prompt Engineering Introduction
	+ Techniques for creating effective prompts
	+ Zero-Shot Learning, Few-Shot, and Chain-of-Thought
	+ Prompt Engineering for Developers
	+ Leverage LLMs for code generation, completion, and analysis
	+ Best practices for prompt design and optimization in a development context
	+ Optimize prompting workflows for next-generation scripting
	+ Handle and process LLM-generated code
	+ Integrate prompts into development pipelines
* Accessing LLMs via APIs
	+ Accessing GPT 3.5 and GPT 4 via the OpenAI API
	+ Roles and Conversation Threading
	+ Popular LLMs, APIs, and Libraries - Generative AI Tech Stack
	+ LangChain for Integration
	+ Closed-Source LLMs vs Open-Source LLMs
	+ Chat Agents for Querying Developer Documentation via API
* Enhancing LLMs with Fine-Tuning
	+ State of the Art Open-Source LLMs
	+ Building Pipelines with HuggingFace Transformers Library
	+ Fine-Tuning with the Hugging Face Transformers library and code-specific data
* Conclusion