Transform Business with Practical AI and Generative AI Expertise & Applications

Course Description

This program provides a structured foundation in AI and Generative AI, covering core concepts, prompt engineering, AWS and managed AI services, and practical business applications. Learners gain experience with leading tools while exploring responsible AI, governance, and industry use cases. Designed to bridge theory and practice, the course equips professionals to apply AI/GenAI effectively in workflows and decision-making.

This Program is essentially a **"bridge program"**: it takes learners from **AI fundamentals** through **hands-on GenAI tools** to **business-focused applications and governance**, making it ideal for professionals who want both conceptual clarity and practical skills.

Program Duration

Total 33 Hours

Learning Format

Online and On-demand

Benefits

- Build strong knowledge of AI, ML, and GenAI fundamentals
- Learn prompt engineering and advanced LLM techniques
- Explore AWS Bedrock, SageMaker, and managed AI services
- Apply AI/GenAI to real-world business workflows and productivity, including manufacturing, financial, healthcare sectors etc.
- Understand responsible AI, compliance, and governance

Target Learners

- Business professionals seeking AI/GenAI adoption
- Managers and decision-makers exploring AI use cases
- Aspiring AI practitioners preparing for certifications
- Developers and analysts integrating AI into workflows

Total: 4 Certificates

1. AWS Certified AI - Practitioner

This course provides a comprehensive introduction to Generative AI on AWS. It covers foundation models, Amazon Bedrock, prompt engineering, RAG, Amazon Q, machine learning fundamentals, SageMaker, MLOps, managed AI services, responsible AI, and security, governance, and compliance concepts with demos and exam-focused guidance.

Program Duration
9 Hours

Learning Format
Online and On-demand

Course Curriculum

AWS Certified AI - Practitioner

Lesson 01: Introduction

Lesson 02: Basics of Generative AI

Lesson 03: Gen AI on AWS - Amazon Bedrock
3.01 Types of Foundation Models
3.02 Business Metrics for Generative AI
3.03 Amazon Bedrock - Overview
3.04 Amazon Bedrock - Demo
3.05 Foundation Models on Amazon Bedrock - How to Choose ?
3.06 Finetuning Foundation Models
3.07 Evaluation Metrics of Foundation models
3.08 Amazon Bedrock - Evaluation - Demo
3.09 Understanding RAG Architecture of LLM
3.10 AWS Services for Storage of Vector Embeddings
3.11 Amazon Bedrock RAG & Knowledge Base - Demo
3.12 Amazon Bedrock - GuardRails
3.13 Amazon Bedrock - GuardRails - Demo
3.14 Amazon Bedrock Agents
3.15 Amazon Bedrock Integrations - Cloudwatch - S3
3.16 PartyRock - Amazon Bedrock Playground
3.17 Amazon Bedrock - Pricing

Lesson 04: Prompt Engineering

4.01 Prompt Engineering
4.02 Prompt Engineering - Demo
4.03 Fundamentals of Prompt Design
4.04 Techniques for Effective Prompts
4.05 Techniques for Effective Prompts - Demo
4.06 Parameter Efficient Finetuning Technique
4.07 Prompt Learning: P-tuning
4.08 A/B Testing

Lesson 05: Amazon Q - AI Powered Assistant

5.01 What is Amazon Q Business
5.02 Amazon Q Apps
5.03 Amazon Q Developer

Lesson 06: Fundamentals of AI & ML

6.01 What is Machine Learning ?
6.02 Understanding difference - AI Vs Deep Learning Vs Machine Learning
6.03 Types of Data
6.04 Types of Machine Learning
6.05 Example Use Cases to Identify the Machine Learning Use Case
6.06 AWS Services for Machine Learning
6.07 Steps for Machine Learning
6.08 Classification task - Demo
6.09 Model Selection, Training and Evaluation
6.10 Data Preprocessing Essentials
6.11 Evaluating Classification Models
6.12 Confusion Matrix
6.13 Examples of Interpretation of Confusion Matrix
6.14 Evaluation Metrics - Regression
6.15 Unsupervised Learning - Clustering
6.16 Types of Inferencing - When to Use What ?
6.17 What is Deep Learning ?
6.18 Usage of Deep Learning/ ML models in Production

Lesson 07: Amazon Sagemaker

7.01 Introduction to Amazon Sagemaker
7.02 Amazon Sagemaker - Demo
7.03 Amazon Sagemaker Data Wrangler - Deep Dive
7.04 Amazon Sagemaker Feature Store - Deep Dive
7.05 Amazon Sagemaker Model Monitor - Deep Dive
7.06 Amazon Sagemaker Jumpstart

Lesson 08: Foundations of MLOPs

8.01 What is MLOps ?
8.02 AWS Services for MLOps

Lesson 09: AWS Managed AI Services

9.01 Amazon Comprehend
9.02 Amazon Comprehend - Demo
9.03 Amazon Translate
9.04 Amazon Translate - Demo
9.05 Amazon Transcribe
9.06 Amazon Transcribe - Demo
9.07 Amazon Polly
9.08 Amazon Polly - Demo
9.09 Amazon Rekognition
9.10 Amazon Rekognition - Demo
9.11 Amazon Lex

9.12 Amazon Lex - Demo
9.13 Amazon Kendra
9.14 Amazon Mechanical Turk
9.15 Amazon Augmented AI (A2I)
9.16 Amazon Personalize
9.17 Amazon Textract

Lesson 10: Responsible AI

Lesson 11: Security, Compliance, and Governance for AI Solutions

Lesson 12: Before you Appear for Examination

5+ Skills Covered

- Generative AI
- Amazon Bedrock
- Prompt Engineering
- Machine Learning Basics
- Responsible AI

2. Prompt Engineering with OpenAI and Anthropic

Learn practical prompt engineering while building real AI-powered developer tools. Work with OpenAI, Anthropic, LiteLLM, and Ollama, master tokenization, cost control, advanced prompting, structured outputs, self-consistency, tool calling, and build full CLI features like smart commits and code reviews.

Program Duration
16 Hours

Learning Format
Online and On-demand

Course Curriculum

Lesson 01: Getting Started with Prompt Engineering

Lesson 02: Setting Up Your Development Environment

2.01 Section Overview
2.02 Configuring Your Local Python Environment
2.03 Setting Up Your OpenAI Account and Keys
2.04 Setting Up Your Anthropic Account and Keys

Lesson 03: OpenAI Python Library Crash Course

3.01 Section Overview
3.02 Environment Setup
3.03 Managing API Authentication Securely
3.04 Making Your First API Call to a Chat Model
3.05 Simplifying LLM Calls with LiteLLM
3.06 Connecting to Anthropic Models via LiteLLM
3.07 Understanding and Parsing the API Response
3.08 Controlling Creativity and Length with Temperature and max tokens
3.09 Fine-Tuning Output with stop, n, and response_format
3.10 Implementing Real-Time Responses with Streaming
3.11 How to Run Large Language Models Locally with Ollama

Lesson 04: Project Module #1: Building the AI Toolbox Foundation

4.01 Module Overview and Goals
4.02 Creating the Initial Project Structure
4.03 A Guided Tour of the Starter Code
4.04 Building the CommandLine Interface with Click
4.05 Implementing an AI-Powered "Hello World"
4.06 Writing Your First Test for the AI Feature

Lesson 05: Core Concepts: The Inner Workings of LLMs

5.01 Section Overview

5.02 Understanding Tokenization
5.03 Practical Lab: Exploring Tokenization
5.04 Practical Lab: Advanced Tokenization Concepts
5.05 The Role of Log Probabilities in Text Generation
5.06 Practical Lab: Simulating Sentence Generation
5.07 The Context Window and Its Limitations
5.08 Key Components of API Usage Costs
5.09 Practical Lab: Calculating API Costs
5.10 Practical Lab: Advanced Cost Analysis
5.11 Exploring Different Classes of Language Models
5.12 The Importance of System, User, and Assistant Roles
5.13 Practical Lab: Crafting Effective System Prompts

Lesson 06: Foundational Prompt Engineering Patterns

6.01 Section Overview
6.02 The Anatomy of a Prompt: Instructions, Context, and Constraints
6.03 Practical Lab: Building a Structured Prompt
6.04 Using Delimiters to Structure Prompts
6.05 Refactoring a Prompt with Delimiters
6.06 Practical Lab: Applying Delimiters Effectively
6.07 Setting Personas for Targeted Responses
6.08 Practical Lab: Implementing the Persona Pattern
6.09 Practical Lab: Setting Clear Behavioral Guidelines for the AI
6.10 Case Study: Creating a Database Administrator Persona
6.11 Improving Accuracy with Few-Shot Prompting
6.12 Practical Lab: Implementing Few-Shot Examples
6.13 Strategies for Controlling Output Format
6.14 Advanced Output Formatting Techniques
6.15 Encouraging Reasoning with Chain-of-Thought
6.16 Practical Lab: Applying Chain-of-Thought Prompting
6.17 Organizing Information with the Template Pattern
6.18 Practical Lab: Building and Using Prompt Templates

Lesson 07: Project Module #2: AI-Powered Git Commit Messages

7.01 Module Overview and Goals
7.02 Setting Up the Boilerplate for the Commit Feature
7.03 Programmatically Retrieving Git Diffs
7.04 Designing Prompt Templates for Commit Messages
7.05 Building the Core Logic for AI Commits
7.06 Adding a User Review and Edit Step
7.07 Enhancing the Test Suite for the Commit Feature
7.08 Integrating Robust Logging
7.09 Enabling Model Selection via the CLI
7.10 Documenting the Smart Commit Feature

Lesson 08: Mastering Advanced Prompt Engineering

8.01 Section Overview
8.02 Practical Lab: The "Flip the Script" Pattern
8.03 Practical Lab: "Flip the Script" Pattern Applications
8.04 Practical Lab: Using AI to Generate Prompts
8.05 Practical Lab: Refining AI-Generated Prompts
8.06 Practical Lab: Breaking Down Complex Tasks with Decomposition

8.07 Practical Lab: Improving Responses with Self-Critique
8.08 Practical Lab: Introduction to Function Calling
8.09 Practical Lab: Advanced Function Calling
8.10 Practical Lab: Introduction to Self-Consistency
8.11 Practical Lab: Self-Consistency Wrap-Up

Lesson 09: Project Module #3: Building an AI Code Reviewer

9.01 Module Overview and Goals
9.02 Reviewing the Module Implementation Plan
9.03 Refactoring to Use the GitPython Library
9.04 Improving Exception Handling
9.05 Creating the Boilerplate for the Review Command
9.06 Using Dataclasses for Structured Data
9.07 Adding the Review Command to the CLI
9.08 Designing Prompts for Logic and Syntax Checks
9.09 Executing the Core AI Review Logic
9.10 Developing Expert Personas for Deeper Code Analysis
9.11 Building a Self-Consistency Workflow for Reviews
9.12 Completing the Self-Consistency Implementation
9.13 Defining External Tools for the Reviewer
9.14 Building a Basic Tool Registry
9.15 Completing the Tool Registry
9.16 Resolving Static Typing Errors
9.17 Creating the Initial AI Tool-Calling Loop
9.18 Refining the Tool-Calling Logic
9.19 Writing Tests for the Tool-Calling Feature
9.20 Integrating a Self-Critique Phase into the Review Process

Lesson 10: Project Module #4: Structured Output and Finalization

10.01 Module Overview and Goals
10.02 Initiating the Migration to Structured Output
10.03 Refactoring the Review Module for Maintainability
10.04 Resolving Test Failures After Refactoring
10.05 Updating Prompts to Generate JSON Output
10.06 Modifying Tests to Validate JSON Output
10.07 Adapting the Pipeline to Use Dataclasses
10.08 Continuing the Dataclass Migration
10.09 Finalizing the Pipeline Migration
10.10 Addressing and Fixing Minor Bugs
10.11 Correcting Remaining Test Failures
10.12 Building the JSON Output Parser
10.13 Final Touches: Synthesis Logic and Documentation

3. Generative AI Fundamentals - Concepts, Use Cases, and Practical Essentials

This course introduces Generative AI fundamentals, covering AI, ML, and deep learning concepts, neural networks, transformers, BERT, and GPT models. Learners explore prompt engineering, NLP, GenAI tools, business applications, security, and responsible AI, with hands-on demos using ChatGPT and other advanced GenAI tools.

Program Duration
6 Hours

Learning Format
Online and On-demand

Course Curriculum

Lesson 01: Introduction

Lesson 02: Overview of Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL)

2.01 Lesson Introduction
2.02 Introduction to Artificial Intelligence (AI)
2.03 Evolution of Artificial Intelligence
2.04 Types of AI
2.05 Key Components of AI
2.06 AI in Everyday Life and Its Benefits
2.07 Challenges of AI and Why AI is Powerful?
2.08 Early AI Milestones and the Rise of Machine Learning (ML)
2.09 Emergence of Deep Learning (DL) and Key Breakthroughs in AI
2.10 Case Study Google Ads
2.11 Introduction to Machine Learning
2.12 Types of Machine Learning
2.13 Applications of Machine Learning in Business
2.14 Case Study Netflix
2.15 Understanding Reinforcement Learning and Deep Learning
2.16 Case Study Amazon Alexa
2.17 Machine Learning vs Deep Learning
2.18 ML and DL: Applications
2.19 Introduction to Neural Networks
2.20 Types of Neural Networks
2.21 Case Study Amazon
2.22 Key Takeaways

Lesson 03: Introduction to Transformers, Advanced AI Models, and Natural Language Processing (NLP)

3.01 Lesson Introduction
3.02 Attention Mechanism and Transformers
3.03 Types of Attention Mechanism
3.04 Introduction to Transformer Models

3.05 Understanding Self-Attention
3.06 Understanding How Self-Attention Works
3.07 Transformer Model Architecture
3.08 How Encoders Work
3.09 How Decoders Work
3.10 Text Processing in Transformers
3.11 How Transformers Revolutionized AI?
3.12 Transformer Models: Advantage
3.13 Introduction to BERT
3.14 How BERT Learns Through MLM
3.15 Real World Applications of BERT
3.16 Introduction to GPT Models
3.17 Zero-Shot Learning, Few-Shot Learning and Prompt Engineering
3.18 Introduction to Natural Language Processing (NLP)
3.19 NLP: How It Works and What It Power
3.20 Categories of NLP and Techniques Used in NLP
3.21 Real-World Applications of NLP Chatbots
3.22 Text Classification and Its Common Applications
3.23 Applications of NLP in Business
3.24 Case Study: Bank of America
3.25 Key Takeaways

Lesson 04: Overview of GenAI and AI Project Implementation

4.01 Lesson Introduction
4.02 What Are GenAI Models?
4.03 Transformer-Based Large Language Models
4.04 GAN-Based Models
4.05 VAE-Based Models
4.06 Diffusion Models
4.07 Capabilities and Limitations of GenAI Models
4.08 Introduction to GenAI Applications and Tools
4.09 GenAI Tools and Business Use Cases
4.10 Introduction to Prompt Engineering
4.11 Demo: Generating a Product Launch Campaign Using ChatGPT
4.12 Introduction to the GenAI Open-Source Landscape
4.13 Demo: Exploring AI Capabilities with Hugging Face Spaces
4.14 GenAI Security Bias and Responsible Use
4.15 Future of AI and Emerging Trends
4.16 Key Takeaways

Lesson 05: Working with GPTs

5.01 Day-to-Day Tasks ChatGPT Can Do
5.02 Demo: Multilingual Book Translation Using ChatGPT
5.03 Demo: Creating a LinkedIn Profile Using ChatGPT
5.04 Demo: Sentiment Analysis of User Reviews Using ChatGPT
5.05 ChatGPT: Multimodal Capabilities
5.06 Demo: Exploring Multimodal Capabilities of ChatGPT
5.07 Demo: Customer Feedback Analysis Using ChatGPT
5.08 Comparison Between ChatGPT 3.5, 4, and 4o
5.09 ChatGPT Comparison Based on a Use Case
5.10 Comparison Based on a Prompt
5.11 Exploring GPTs: Categories and Use Cases With Examples
5.12 Demo: Creating Marketing Content for Eco Friendly Water Bottles Using Write for Me GPT

5.13 Demo: Designing Visually Appealing Content Using Canva GPT
5.14 Demo: Creating a Website Design Using DesignerGPT
5.15 Demo: Streamlining Literature Surveys on LLM Impact with Consensus GPT
5.16 Demo: Enhancing Educational Material Using Universal Primer GPT
5.17 Generative AI in Business: Impact Across Domains and Workflow Automation
5.18 Demo: Setting Up a Zapier Account and Creating a Zap
5.19 Sales and Marketing
5.20 Demo: Creating a Video Using AI
5.21 Software Engineering
5.22 Demo: Designing User Interfaces with Generative AI
5.23 Data Analytics
5.24 Demo: Data Integrity Using GenAI
5.25 Customer Service and Operations
5.26 Demo: Transcribing Audio Calls to Text

Lesson 06: Advanced GenAI Tools

6.01 Gemini
6.02 Demo: Marketing Strategy Using Gemini
6.03 Descript
6.04 Demo: Creating a Video Using Descript
6.05 Claude
6.06 Demo: Creating a Blog Post Using Claude

4. AI for Everyone

Explore how AI is transforming industries and everyday work. Understand real-world applications, generative AI tools, and AI-driven decision-making. Learn how to use popular AI platforms to improve productivity, analyze data, and build practical workflows across business functions.

Program Duration
2 Hours

Learning Format
Online and On-demand

Course Curriculum

Lesson 01: Course Introduction

1.01 Course Introduction AI for Everyone

Lesson 02: Learning Objectives

2.01 Learning Objectives

Lesson 03: Applications of AI Across Industries

3.01 Applications of Al Across Industries
3.02 Applications of AI in Healthcare and Financial Services
3.03 Applications of AI in Retail and E Commerce
3.04 Applications of AI in Manufacturing and Education
3.05 Applications of AI in Marketing and Sales
3.06 Demo: AI-Powered Recommendation Systems

Lesson 04: Generative AI for Productivity and Content Creation

4.01 Generative AI for Productivity and Content Creation
4.02 Demo: Generative AI for Productivity and Content Creation

Lesson 05: AI in Data Analysis, Business Intelligence (BI) and Decision Making

5.01 AI in Data Analysis, Business Intelligence (BI), and Decision-Making
5.02 Demo: Ask the Data – AI in Business Intelligence

Lesson 06: Famous AI Tools and Real-World Workflows

6.01 Famous AI Tools and Real-World Workflows
6.02 Demo: Building a Workflow Assistant Using Google Gemini

Lesson 07: Key Takeaways

5+ Skills Covered

- AI Fundamentals
- Generative AI Usage
- AI-Powered Analytics
- Workflow Automation
- Data-Driven Decision Making