# AI+ Developer ™

**Duration: 40 hrs**

## Course Overview

AI+ Developer™ certification program offers a tailored journey in key AI domains for developers. Master Python, advanced concepts, math, stats, optimization, and deep learning. The curriculum covers data processing, exploratory analysis, and allows specialization in NLP, computer vision, or reinforcement learning. The program includes time series analysis, model explainability, and deployment intricacies. Upon completion, you'll receive a certification, showcasing your AI proficiency for real-world challenges.

## Course Prerequisites

- Basic Math: Familiarity with high school-level algebra and basic statistics.
- Computer Science Fundamentals: Understanding basic programming concepts (variables, functions, loops) and data structures (lists, dictionaries).
- Python Programming: Proficiency in Python is mandatory for hands-on exercises and project work

## Course Agenda

### Module 1: Foundations of Artificial Intelligence

- Introduction to AI
- Types of Artificial Intelligence
- Branches of Artificial Intelligence
- Applications and Business Use Cases

### Module 2: Mathematical Concepts for AI

- Linear Algebra
- Calculus
- Probability and Statistics
- Discrete Mathematics

## Module 3: Python for Developer

- Python Fundamentals
- Python Libraries

## Module 4: Mastering Machine Learning

- Introduction to Machine Learning
- Supervised Machine Learning Algorithms
- Unsupervised Machine Learning Algorithms
- Model Evaluation and Selection

## Module 5: Deep Learning

- Neural Networks
- Improving Model Performance
- Hands-on: Evaluating and Optimizing AI Models

## Module 6: Computer Vision

- Image Processing Basics
- Object Detection
- Image Segmentation
- Generative Adversarial Networks (GANs)

## Module 7: Natural Language Processing

- Text Preprocessing and Representation
- Text Classification
- Named Entity Recognition (NER)
- Question Answering (QA)

## Module 8: Reinforcement Learning

- Introduction to Reinforcement Learning
- Q-Learning and Deep Q-Networks (DQNs)
- Policy Gradient Methods

## Module 9: Cloud Computing in AI Development

- Cloud Computing for AI

- Cloud-Based Machine Learning Services

## Module 10: Large Language Models

- Understanding LLMs
- Text Generation and Translation
- Question Answering and Knowledge Extraction

## Module 11: Cutting-Edge AI Research

- Neuro-Symbolic AI
- Explainable AI (XAI)
- Federated Learning
- Meta-Learning and Few-Shot Learning

## Module 12: AI Communication and Documentation

- Communicating AI Projects
- Documenting AI Systems
- Ethical Considerations