

# AI+ Quality Assurance

**Duration:** 40 hours

## Course Overview

This course provides a comprehensive curriculum for professionals and technical experts to harness the power of Artificial Intelligence (AI) in Quality Assurance (QA). Through use cases, case studies, and hands-on projects, participants will learn how to implement AI techniques to improve software testing, defect prediction, and process optimization. The curriculum is designed to build practical skills and culminates in a capstone project where learners apply their knowledge to solve real-world QA challenges.

## Course Prerequisites

- **Programming Skills:** Basic knowledge of Python and familiarity with software testing lifecycle and tools.
- **Basics of AI:** Foundational knowledge of machine learning concepts is beneficial but not mandatory
- **Basics of QA:** Basic knowledge of Quality Assurance principles and practices.

## Course Agenda

### Module 1: Introduction to Quality Assurance (QA) and AI

- Overview of QA
- Introduction to AI in QA
- QA Metrics and KPIs
- Use of Data in QA

### Module 2: Fundamentals of AI, ML, and Deep Learning

- AI Fundamentals
- Machine Learning Basics
- Deep Learning Overview
- Introduction to Large Language Models (LLMs)

### Module 3: Test Automation with AI

- Test Automation Basics
- AI-Driven Test Case Generation
- Tools for AI Test Automation
- Integration into CI/CD Pipelines

### Module 4: AI for Defect Prediction and Prevention

- Defect Prediction Techniques
- Preventive QA Practices
- AI for Risk-Based Testing
- Case Study: Defect Reduction with AI

### **Module 5: NLP for QA**

- Basics of NLP
- NLP in QA
- LLMs for QA
- Case Study: Using NLP for Bug Triaging

### **Module 6: AI for Performance Testing**

- Performance Testing Basics
- AI in Performance Testing
- Visualization of Performance Metrics
- Case Study: AI in Performance Testing of a Cloud App

### **Module 7: AI in Exploratory and Security Testing**

- Exploratory Testing with AI
- AI in Security Testing
- Case Study: Enhancing Security Testing with AI

### **Module 8: Continuous Testing with AI**

- Continuous Testing Overview
- AI for Regression Testing
- Use-Case: Risk-Based Continuous Testing

### **Module 9: Advanced QA Techniques with AI**

- AI for Predictive Analytics in QA
- AI for Edge Cases
- Future Trends in AI + QA

### **Module 10: Capstone Project**