Artificial Intelligence (AI) – Practitioner

Machine Learning, Applied AI & AI Development

Target Audience
High School Students (Grades 9–12) and learners who have completed AI Foundations or have basic knowledge of AI, Python, and data.

Program Pathway
Practitioner

Total Duration
84 Hours

Delivery
Cohort-Based + Instructor-Led + Hands-On Labs

Program Goal

This intermediate-level program builds on AI Foundations and introduces students to Machine Learning, data preparation, AI model development, Computer Vision, Natural Language Processing, and applied AI projects.

Program Structure

Module	Topic	Hours
Module 1	Machine Learning & Data Preparation	16
Module 2	Machine Learning Model Development	20
Module 3	Computer Vision & NLP	16
Module 4	AI Evaluation, Deployment & Responsible AI	14
Module 5	AI Practitioner Project	18
Total		**84 Hours**

Curriculum

Module 1 – Machine Learning & Data Preparation

Students learn how Machine Learning works and how data is prepared for AI models.

Topics: Machine Learning Fundamentals • Supervised & Unsupervised Learning • Classification • Regression • Data Preprocessing • Features & Labels • Training & Testing Data • Pandas • NumPy • Scikit-learn

Module 2 – Machine Learning Model Development

Students learn to build, test, evaluate, and improve Machine Learning models.

Topics: Classification • Regression • Decision Trees • Random Forest • Model Training • Predictions • Accuracy • Precision • Recall • Confusion Matrix • Overfitting • Underfitting • Model Comparison

Module 3 – Computer Vision & NLP

Students explore how AI works with images and human language.

Topics: Computer Vision • Image Classification • Image Processing • NLP Fundamentals • Text Classification • Sentiment Analysis • Chatbots • Generative AI Concepts

Module 4 – AI Evaluation, Deployment & Responsible AI

Students learn how AI models are tested, evaluated, deployed, and used responsibly.

Topics: Model Evaluation • Testing • Reliability • Model Limitations • Deployment Concepts • AI Applications • Data Privacy • Bias & Fairness • AI Safety • Responsible AI • Generative AI Risks

Module 5 – AI Practitioner Project

Students apply their knowledge to develop an AI solution for a real-world problem.

Topics: Problem Identification • Data Selection • Data Preparation • Model Development • Testing • Evaluation • Responsible AI Review • Documentation • Final Presentation

Final Project: Build and present an applied AI solution.

Hands-On Learning

Students learn through instructor-led lessons, Python exercises, real-world datasets, practical labs, mini-projects, assessments, and a final AI project.

What Students Build

- Machine Learning models
- Data preparation skills
- Basic Computer Vision solution
- Basic NLP solution
- AI application
- Responsible AI understanding
- Applied AI project

Recommended Lab Requirements

Each student should ideally have:

- Windows or Mac laptop/desktop
- 8 GB RAM recommended
- 10 GB+ free storage

Windows or Mac is recommended. Chromebooks are not preferred for this pathway.

Next Step

After successfully completing AI Practitioner, students can progress to **AI Specialist**, where they explore Deep Learning, Advanced Computer Vision, Generative AI, Large Language Models, AI Agents, and advanced AI projects.