

Certificate in Artificial Intelligence

Duration: 6 months

Level: Beginner / Non-CS Background

Mode: Theory + Hands-on

Tools: Python, Google Colab, AI Platforms

SEMESTER 1 — AI TOOLS, AI THINKING & FOUNDATIONS

Goal: Make students comfortable with AI, confident using AI tools, and ready for ML in Sem 2.

1. Essential Computer & Digital Skills (AI-Oriented)

What is a computer & how AI runs on computers

Internet, browsers, cloud platforms

Files, folders, CSV, images, PDFs

Introduction to cloud notebooks

Overview of GitHub (conceptual)

CPU and GPU details

2. Introduction to Artificial Intelligence (Modern & Practical)

What is AI? (with daily-life examples)

AI vs Machine Learning vs Deep Learning

Types of AI applications:

Chatbots

Image recognition

Recommendation systems

Fraud detection

Limitations of AI

3. AI Tools & AI Platforms (Core Module)

Using ChatGPT for:

Learning

Coding

Data understanding

Overview of Google Gemini

Overview of Claude

AI for productivity:

Resume building

Report generation

Presentation creation

AI risks, hallucinations & validation

Object detection using YOLO and Annotations

4. Prompt Engineering (Hands-On & Job Relevant)

What is a prompt?

Prompt structure:

Instruction

Context

Output format

Zero-shot vs Few-shot prompting

Prompting for:

Data analysis

Coding

Chatbots

Prompt ethics & safety

Lab:

Build prompt templates

Compare outputs across AI tools

5. Python Programming for AI (Minimal but Practical)

Python basics:

Variables, data types

Basic DSA knowledge

Lists, dictionaries

Loops & conditions

Functions

Basic OOPs programming

Easy-Medium Level coding problems to sharpen logic

Running Python on Google Colab

Intro to AI libraries:

NumPy

Pandas

Matplotlib

Reading datasets (CSV)

What is ML? Difference between traditional programming and Machine Learning (just the basic idea to prepare for sem-2)

Relation of Machine Learning with AI (same as above)

Lab:

Load & analyze real datasets

AI-assisted coding

6. AI Ethics & Sustainable AI

Fair & Inclusive AI Systems

Data Stewardship & Privacy by Design

Safe Use & Misuse Prevention

Energy-Efficient & Low-Carbon AI

Human-centric AI and employment

7. Mini AI Projects (Tool-Based)

AI resume analyzer

AI content generator

AI data summary tool
Prompt-based chatbot (no ML yet)
End of Certificate course Outcome
Confident AI user
Prompt engineer
Python basics
Ready for ML

Diploma in Artificial Intelligence

Duration: 1 Year

Level: Beginner / Non-CS Background

Mode: Theory + Hands-on

Tools: Python, Google Colab, AI Platforms

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AI content generator
AI data summary tool

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End of Semester 1 Outcome
Confident AI user
Prompt engineer
Python basics
Ready for ML

SEMESTER 2 — MACHINE LEARNING & AI APPLICATIONS

Goal:

Move from using AI to building AI systems

1. Machine Learning Foundations

What is Machine Learning?

ML vs traditional programming

Types of ML:

Supervised

Unsupervised

Reinforcement (conceptual)

Real-world ML use cases

2. Data Understanding & Preparation

What is data?

Features & labels

Numerical vs categorical data

Data cleaning:

Missing values

Scaling (intuitive)

Train-test split

3. Essential Math for ML (Only What's Needed)

Mean, median, variance

Distance concept (intuition)

Correlation (idea, not proofs)

Why math matters in ML

4. Core Machine Learning Algorithms (Hands-On)

Main strength of the course

Supervised Learning

Linear and logistic Regression

Decision Trees

Random Forest

Model evaluation:

Accuracy

Confusion matrix

Overfitting vs underfitting

Unsupervised Learning

K-Means Clustering

Applications:

Customer segmentation

Data grouping

Choosing number of clusters (intuition)

Lab (Google Colab):

Build, train & test models

Compare multiple models

Interpret results

5. Intro to Neural Networks (Conceptual + Demo)

What is a neural network?

Neurons & layers (intuition)

Where deep learning is used

Demo using prebuilt libraries

6. Building AI Applications

ML pipelines

Using trained models for prediction

Connecting ML models to simple apps

AI APIs overview

7. Capstone Project (Mandatory)

Choose ONE:

Option 1: AI Analysis Tool

Examples:

Sales prediction tool

Student performance analyzer

Customer segmentation system

Accident or risk analysis system

Option 2: AI Chatbot

Examples:

College helpdesk chatbot

Customer support chatbot

AI study assistant

FAQ chatbot using ML / NLP concepts

Must include:

Dataset

ML model (K-Means / Decision Tree / Random Forest etc.)

Model evaluation

Final presentation

FINAL OUTCOMES

AI tool expert

Prompt engineer

Python for AI

ML model developer

Project-ready for internships / entry-level roles

Certificate in Python Programming

Duration: 6 Months

Level: Beginner / Non-CS Friendly

Course Fee: 6,000

Primary Tools: Python, Google Colab, Pandas, scikit-learn

SEMESTER 1 — PYTHON PROGRAMMING, CODING & DATA FOUNDATIONS

Goal:

Make students strong Python coders who can solve basic placement problems and work with data confidently.

1. Essential Computer & Coding Environment

How data is stored: files, CSV, Excel

Folder structure & file paths

Introduction to Google Colab

Running Python scripts & notebooks

Debugging basics

2. Python Programming (CORE – Heavy Focus)

Python Fundamentals

Variables & data types

Input / output

Conditional statements

Loops (for, while)

Functions & scope

Basic error handling

Core Python Data Structures (VERY IMPORTANT)

Lists

Indexing & slicing

List methods

Tuples

When to use tuples vs lists

Dictionaries

Key-value operations

Frequency counting

Sets

Uniqueness & set operations

String manipulation

Certificate in Green Skills with AI

Eligibility: Passed: Class 10th or Higher
Duration: 48 hours or 6 months
Course Fees : 6000/-

GREEN FOUNDATIONS, AI TOOLS & APPLIED SKILLS

Goal:

Build environmental awareness, develop practical green skills, and enable learners to use AI tools and basic data analysis for sustainability, climate, and ESG use cases.

1. Essential Digital & Data Skills for Green Careers

- What is a computer & how digital systems support sustainability
 - Internet, browsers, cloud platforms
 - Files, folders, CSV, images, PDFs
 - Introduction to cloud notebooks (Google Colab)
 - Overview of GitHub (conceptual)
 - CPU, GPU & energy consumption basics
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2. Sustainability & Climate Change Fundamentals

- What are Green Skills?
 - Climate change basics:
Greenhouse gases
Carbon cycle
Global warming
 - Environmental challenges:
Air pollution
Water pollution
Waste management
Energy transition
 - Introduction to ESG (Environmental, Social, Governance)
 - Green jobs & future career paths
-

3. Artificial Intelligence for Sustainability

- What is AI? (sustainability-focused examples)
 - AI vs traditional environmental monitoring
 - AI applications in:
Air & water quality monitoring
Climate risk analysis
Energy efficiency & renewables
Smart agriculture
Waste management
 - Limitations of AI in environmental decision-making
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4. AI Tools & Platforms for Green Applications

- Using ChatGPT for:

Sustainability research
Climate & ESG report drafting
Environmental data understanding

- Overview of Google Gemini
- Overview of Claude
- AI for green productivity:

Emissions summaries
Sustainability presentations
Compliance checklists

- AI risks, hallucinations & greenwashing
- Intro to AI-based image/object detection:

Waste segregation
Environmental monitoring

5. Prompt Engineering for Green Use Cases (Hands-On)

- What is a prompt?
- Prompt structure:

Instruction
Context
Output format

- Zero-shot vs Few-shot prompting
- Prompting for:

Climate data analysis
ESG summaries
Environmental compliance support

- Prompt ethics & responsible AI

Lab:

- Build sustainability-focused prompt templates
- Compare outputs across AI tools
- Validate AI-generated environmental insights

6. Python Programming & Data Basics for Sustainability

- Python fundamentals:

Variables, data types
Lists, dictionaries
Loops & conditions
Functions

- Running Python on Google Colab
- Intro to libraries:

NumPy
Pandas
Matplotlib

- Reading environmental datasets (CSV)
- Basic data visualization for pollution & climate data

Lab:

- Create simple energy/emissions charts
 - AI-assisted coding
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7. Sustainable AI & Green Computing

- Fair & inclusive AI systems for climate solutions
 - Data stewardship & privacy in environmental data
 - Preventing AI misuse & greenwashing
 - Energy-efficient & low-carbon AI systems
 - AI, automation & green employment
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8. Mini Green AI Projects (Tool-Based)

- AI-based air quality report generator
 - Climate policy & news summarizer
 - Energy consumption analysis tool
 - Prompt-based sustainability chatbot
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End of Certificate Course Outcomes

- Strong foundation in green skills & sustainability
- Confident user of AI tools for climate & ESG applications
- Basic Python & environmental data analysis skills
- Understanding of Sustainable AI principles
- Job-ready for entry-level green & sustainability support roles