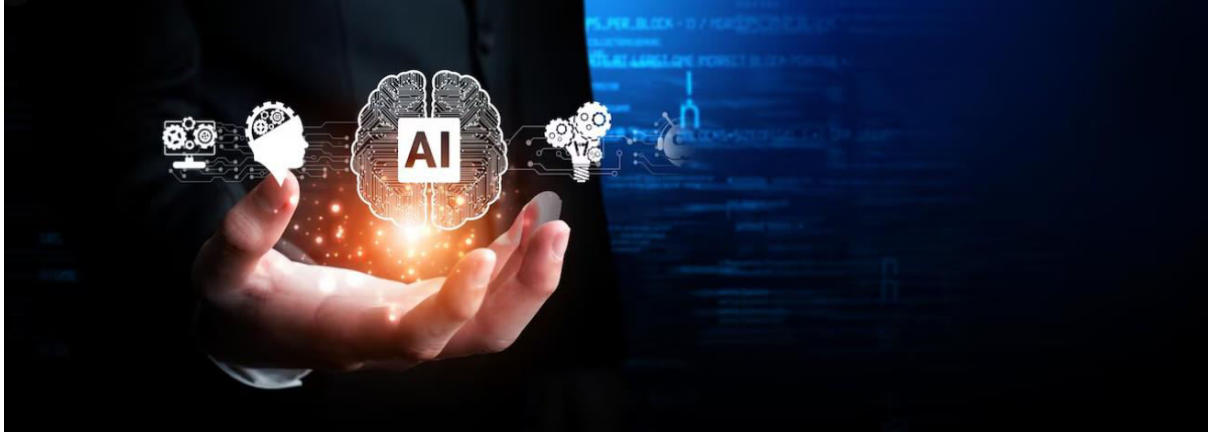

AI ESSENTIALS

Hands-On Course in AI, LLMs & Deep Learning (with Beginner-Friendly Coding)

Certificate of Completion: AI Essentials

Course Code: IT_HM_I_008/25

Duration: 40 Hours

Delivery Format: Hybrid

Target Audience:

- Individuals new to AI: The course starts with very fundamental concepts and gradually builds up complexity, implying it's suitable for those with little to no prior AI knowledge.
- Professionals seeking AI literacy: The focus on real-world applications and AI tools suggests it's relevant for people in various industries who want to understand how AI can be applied to their work.
- Those interested in hands-on learning: The emphasis on practical exercises and projects indicates it's designed for people who learn best by doing.

Program Objectives:

- Understand the fundamentals of AI, Machine Learning, and Deep Learning.
- Explore the real-world applications of AI across various industries.
- Gain hands-on experience with AI tools and techniques, including Large Language Models (LLMs).
- Develop basic AI models using Python and relevant libraries.
- Understand the ethical considerations and responsible use of AI.

Detailed Syllabus

Module 1 (5 hours): Introduction to AI & Its Real-World Impact

Objective: To introduce the core concepts of AI and its transformative effects on various industries.

Topics:

- What is Artificial Intelligence? - AI vs. Machine Learning vs. Deep Learning
- How AI is Transforming Industries - Healthcare, finance, entertainment, business
- Types of AI: Narrow AI vs. General AI vs. Super AI
- Hands-on with AI Tools - ChatGPT, Google Bard, DALL E, RunwayML

Activities:

- Mini-Project: AI in My Daily Life - Research and present a report on how AI is already shaping your everyday activities.

Module 2 (6 hours): Machine Learning Basics (with Simple Coding)

Objective: To provide a foundational understanding of Machine Learning and basic coding skills for AI.

Topics:

- What is Machine Learning (ML)? - Supervised, Unsupervised & Reinforcement Learning
- How AI Models Learn from Data - The role of data in ML & AI
- Introduction to Python for AI - Basic Python concepts (variables, loops, functions)
- Building a Simple ML Model (No Prior Coding Needed!)
    - Using Google Colab & Scikit-Learn to create a simple AI model
    - Train a spam email detector using basic ML

Activities:

- Project: Train Your Own AI Model - Create a simple image classification model using Google's Teachable Machine.

Module 3 (6 hours): Large Language Models (LLMs) & Generative AI

Objective: To explore Large Language Models and Generative AI and their applications.

Topics:

- What Are Large Language Models (LLMs)? - How ChatGPT, Bard & Gemini work
- Text Generation & AI-Powered Writing - Using AI for content creation
- How LLMs Understand & Process Language - Basics of Natural Language Processing (NLP)
- Hands-on: Experimenting with LLMs - Prompt engineering for better AI responses

Activities:

- Mini Coding Task: Write a Simple Python script using OpenAI's API to generate text responses.
- Project: AI-Powered Blog Generator - Use ChatGPT & Python to create an AI-generated blog post.

Module 4 (6 hours): Deep Learning & Neural Networks

Objective: To introduce Deep Learning and Neural Networks.

Topics:

- What is Deep Learning? – Basics of neural networks and deep learning models
- Understanding Artificial Neural Networks (ANNs) - Neurons, layers, and activation functions
- Exploring AI-Powered Image & Video Generation Tools - DALL-E, Midjourney, RunwayML
- Introduction to TensorFlow & PyTorch - Running a pre-trained deep learning model

Activities:

- Mini Coding Task: Run a Pre-Trained AI Model - Use TensorFlow to classify images from a dataset.
- Project: Create AI-Generated Art - Use DALL-E or Midjourney to generate AI-based images.

Module 5 (5 hours): AI in Business, Automation & Decision-Making

Objective: To explore AI tools for automation and productivity in a business context.

Topics:

- AI in Marketing, Finance, and Customer Service - AI-driven automation
- AI for Productivity & Business Growth - AI tools in decision-making
- No-Code AI Automation Tools - Zapier AI, Copy.ai, Jasper.ai
- AI for Market & Competitor Analysis

Activities:

- Project: AI Business Innovation Challenge - Use AI tools to propose an AI-driven business solution.

Module 6 (5 hours): AI in Everyday Life - Applications & Future Trends

Objective: To examine AI applications in daily life and discuss future trends.

Topics:

- AI in Healthcare, Education, and Smart Devices
- Voice Assistants & AI-Powered Virtual Assistants - Alexa, Siri, Google Assistant
- Future of AI: AI's Role in the Next Decade
- Exploring AI Careers & Job Opportunities

Activities:

- Mini-Project: AI Career Map - Research and create a roadmap of AI career opportunities.

Module 7 (4 hours): AI Ethics, Security & Responsible Use

Objective: To address the ethical implications, security concerns, and responsible use of AI.

Topics:

- Bias in AI & Its Consequences - Case studies on AI bias
- AI Security & Deepfakes - Risks of AI-generated content
- How to Use AI Responsibly in Business & Personal Life
- AI Regulations & Compliance - GDPR, AI governance, ethical AI

Activities:

- Project: AI Ethics Case Study - Analyze a real-world case where AI caused ethical concerns.

Module 8 (4 hours): Capstone Project - AI-Powered Innovation

Objective: To develop a final AI-powered solution.

Activities:

Final Project: Develop an AI-Powered Solution

- Choose an AI application (marketing, healthcare, finance, automation, education)
- Use AI tools (ChatGPT, Teachable Machine, TensorFlow) to build a practical solution
- Write a simple AI model in Python and showcase its working
- Present a business pitch with AI-generated insights & content

Learning Objectives:

By the end of this course, learners should be able to:

- Define key concepts in Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning, and differentiate between them.
- Identify and discuss real-world applications of AI across various industries and in everyday life.
- Use various AI tools and platforms, including Large Language Models (LLMs) and Generative AI tools, for tasks like content creation and automation.
- Build and train simple AI models using Python and libraries like Scikit-Learn and TensorFlow.
- Recognize and discuss ethical considerations, security concerns, and responsible use of AI.