# DELTA
## ANALYTICS TRAINING

# Introduction to AI, Machine Learning and Deep Learning

**Course Level:**

**Number of days:** 1

**Delivery method:** On-site

## Course aims

The aim of this course is to introduce the fields of artificial intelligence (AI), machine learning (ML) and deep learning (DL).

The course explains how artificial intelligence emerged in the 1950s, and discusses its initial successes and subsequent challenges and failures. We then explore the practical and technical challenges of achieving AI, including the importance of obtaining relevant data, the costs of running large deep learning models, and whether AI systems really learn.

The course also explains how machine learning emerged as a separate field in the 1950s, and introduces the three core types of machine learning – supervised, unsupervised and reinforcement learning.

The course concludes by introducing deep learning, explaining how it has evolved from the 1940s to today's deep learning models. We focus on its use-cases, limitations and current research areas, including Large Language Models and AI interpretability and explainability.

## Learning Outcomes

**1. Understand the core issues of artificial intelligence.**

1.1    Define what is meant by the term **artificial intelligence**.
1.2    Understand the challenges in achieving artificial intelligence.
1.3    Review some successes and failures of artificial intelligence.

**2. Understand the core issues of machine learning.**

2.1    Define what is meant by the term **machine learning**.
2.2    Explain the main types of machine learning: **supervised**, **unsupervised** and **reinforcement learning**.
2.3    Understand the uses of machine learning.

**3. Understand the core issues of deep learning.**

3.1    Define what is meant by the term **deep learning**.
3.2    Explain basic deep learning architecture.
3.3    Understand the challenges of of deep learning.

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