

**Course Title:** Artificial Intelligence Essentials Certificate**Course Duration:** 1.0 Day**Exam:** Included**Exam Type:** Classroom Exam**Qualification:** Artificial Intelligence Essentials certificate

## Course Outline

### Learning Objectives

#### 1. Artificial and Human Intelligence: An Introduction and History (25%)

Candidates will be able to:

- 1.1 Recall the general definition of human and Artificial Intelligence (AI);
- 1.2 Describe 'learning from experience' and how it relates to Machine Learning (ML);
- 1.3 Understand what enabled the growth of Artificial Intelligence;
- 1.4 Describe how Machine Learning is part of Universal Design and The Fourth Industrial Revolution.

1.4.1 The candidate knows the general description of human and Artificial Intelligence;

1.4.2 The candidate can describe '*learning from experience*' and how it relates to Machine Learning – Tom Mitchell's explicit definition;

1.4.3 The candidate knows that ML is a significant contribution to Artificial Intelligence;

1.4.4 The candidate can describe how AI is part of '*Universal Design*,' and '*The Fourth Industrial Revolution*'.

#### 2. Examples of AI: Benefits, Challenges and Risks (30%)

Candidates will be able to:

- 2.1 Explain the benefits of Artificial Intelligence and list advantages of machine and human and machine systems;
- 2.2 Describe the challenges of Artificial Intelligence and give: general examples of the limitations of AI compared to human systems, general ethical challenges AI raises;
- 2.3 Demonstrate understanding of the risks of Artificial Intelligence and give: at least one a general example of the risks of AI.

2.3.1 The candidate knows the benefits of Artificial Intelligence;

12.3.1.1 and also list advantages of machine and human and machine systems;

2.3.2 The candidate knows the challenges of Artificial Intelligence;

2.3.2.1 and also give general examples of the limitations of AI compared to human systems,

2.3.2.2 and also give general ethical challenges AI raises;

2.3.3 the candidate knows the risks of Artificial Intelligence;

**2.3.3.1.** and also give a general example of the risks of AI;

**2.3.3.2** the candidate can identify a typical funding source for AI projects

**2.3.3.3** The candidate can list opportunities for AI.

### **3.An introduction to Machine Learning (35%)**

Candidates will be able to:

3.1 Demonstrate understanding of the approach to a Machine Learning project and list and describe each stage;

3.2 Give typical examples of Machine Learning in the following

contexts: Business,

Social(media, entertainment),

Science;

3.3 Describe both what and where the resources for Machine Learning are.

3.3.1 the candidate understands the AI intelligent agent description and can identify the differences with Machine Learning ( M);

3.3.1.1 can list the four rational agent dependencies,

3.3.1.2 can describe agents in terms of Performance Measure, Environment, Actuators and Sensors,

3.3.1.3 can describe four types of agent, Reflex, Model-based reflex, Goal-based agent and Utility-based agent.

**3.3.2** the candidate knows typical examples of Machine Learning in business, social (media, entertainment) and science;

**3.3.3** the candidate knows what typical narrow AI functionality is useful in ML and AI agent's functionality;

**3.3.4** the candidate can describe and give examples of supervised, un-supervised, semi-supervised and reinforcement machine learning;

**3.3.5** the candidate can describe the basic schematic of a Neural Network.

### **4.The Future of Artificial Intelligence – Human and Machine Together (10%)**

Candidates will be able to:

4.1 Demonstrate an understanding that Artificial Intelligence (in particular, Machine Learning) will drive humans and machines to work together;

4.2 List future directions of humans and machines working together.

## **Course Introduction**

Artificial Intelligence (AI) is a methodology for using a non-human system to learn from experience and imitate human intelligent behaviour. The essentials certificate tests a candidate's knowledge and understanding of the terminology and the general principles of AI. Certification covers the potential benefits, types of artificial intelligence, the basic process of Machine Learning (ML), the challenges and risks associated with an AI project and the future of AI and Humans in work.

Our AI Essentials course was developed and delivered by **Dr Andy Lowe** - Andy has 20 years plus of experience in academia and industry working with high performance computing. He has a honours degree in mechanical engineering and a PhD in numerical simulation. He's worked with high tech start-ups and large high-tech engineering organisation using some of the world's most powerful computers. He uses AI on a daily basis in the analysis of simulations e.g. Weather, Extreme Environments, Engineering) he builds.

### Course Description

The Essentials course is a self-contained 1-day course that provides an introduction to AI. It also leads on to the [AI Foundation course](#)

### About the Course

This one-day course provides a complete introduction to Artificial Intelligence for those who need to understand the terminology and concepts used in this area.

The course is made available via our public schedule of courses. It can also be delivered as a dedicated on-site course and via e-learning on our on-line portal.

### Audience

The Artificial Intelligence Essentials certificate is focussed on professionals internationally with an interest in, or a need to implement AI in an organisation. Professionals working in areas such as science, engineering, knowledge engineering, finance, or IT services.

The following roles should be interested:

- Engineers
- Scientists
- Professional Research Managers
- Chief Technical Officers
- Chief Information Officers
- Organisational Change Practitioners and Managers
- Business Change Practitioners and Managers
- Service Architects and Managers
- Program and Planning Managers
- AI Project Managers
- Service Provider Portfolio Strategists / Leads
- Process Architects and Managers
- Business Strategists and Consultants
- Web Page Developers

### Prerequisites

There are no specific pre-requisites for the entry to this course or the examination.

It is highly recommended that candidates have a good knowledge of computers and a basic understanding of data using computers (e.g. spreadsheets).

### Prereading

None,

## Materials

The following training materials will be provided

- A full AI Essentials course manual
- Exercises
- Sample exam

## Individual Benefits

Individuals will benefit by:

- Having an up to date understanding of AI
- Being able to identify opportunities to apply AI solutions
- Being able to position themselves to take advantage of increased technology

## Organisational Benefits

Organisations will benefit by:

- Having staff that are aware of the capabilities of AI and how it can contribute to organisational success
- Compete in an advanced technological future
- Use AI to increase efficiency and reduce costs

## Exam Overview

The exam consists of a 30 minute 'closed book' simple multiple-choice examination with twenty multiple choice questions.

Candidates are expected to answer 65% of the questions correctly {13/20}.

International candidates whose first language is not that of the language of the examination paper are allowed:

- a paper dictionary that allows translation between the candidate's first language and the language of the examination language, and,
- 25% extra time.

## Credits

Artificial Intelligence Essentials Certificate

## Next Steps

Once the Essentials Certificate is completed the next logical step would be the [3-day AI foundation course](#) which prepares individuals to start using AI, in particular Machine Learning.

## Summary

The Artificial Intelligence Essentials Certificate course will give you a basic understanding of the terminology and concepts used by those working in and on Artificial Intelligence programs and projects.