



## Certification Exam: ICT Introduction to Artificial Intelligence (AI) Certificate Test

### Exam Objectives

The ICT Introduction to Artificial Intelligence (AI) courseware is written to the following Exam Objectives:

#### Domain 1: Artificial Intelligence (AI)

- 1.1: Defining Artificial Intelligence
  - 1.1.1 Define Artificial Intelligence and how it relates to problem solving
  - 1.1.2 Describe how algorithms are used in AI
  - 1.1.3 Explain what an algorithm consists of and how they are used in problem solving
  - 1.1.4 Define "Big Data" and examples of it in today's world
  - 1.1.5 Describe some everyday examples of AI and their purposes
  - 1.1.6 Describe AI's significant impact in different areas

#### Domain 2: Subsets and History of AI

- 2.1: Describing the Subsets of AI
  - 2.1.1 Define the three subsets of AI
  - 2.1.2 Describe how these subsets are connected
  - 2.1.3 Explain why machine learning is the most used area of AI
  - 2.1.4 Explain the difference between machine learning and deep learning
- 2.2: Describe how AI has developed over time
  - 2.2.1 Create a timeline of the development of AI
  - 2.2.2 Identify who the word "Artificial Intelligence" was first coined by and when
  - 2.2.3 Identify milestones in the development of AI
  - 2.2.4 Describe some examples of how AI has been used over time (Product Examples)
  - 2.2.5 What are some international laws and ethics regulations regarding the use of AI

#### Domain 3: AI Types Based on Technology

- 3.1: Types of AI according to technology
  - 3.1.1 Identify the three types of AI that are divided by technology
  - 3.1.2 Explain why narrow AI is the only one achieved so far
  - 3.1.3 Describe some examples of narrow AI
  - 3.1.4 Explain what Natural Language Processing is and how it provides a personalized experience
  - 3.1.5 Explain how narrow AI can be reactive or have limited memory
  - 3.1.6 Describe examples of narrow AI in today's world
  - 3.1.7 Define what factors make AI considered to be "Deep AI" type
  - 3.1.8 Explain how Deep AI is different from Narrow AI
  - 3.1.9 Define Artificial Super Intelligence

#### Domain 4: AI Types Based on Functionality

- 4.1: Types of AI according to functionality
  - 4.1.1 Identify the four types of AI that are divided by functionality
  - 4.1.2 Describe what a reactive machine can and cannot do
  - 4.1.3 Explain how a reactive machine can make predictions
  - 4.1.4 Explain how reactive machines work.
  - 4.1.5 Describe some everyday examples reactive machines
  - 4.1.6 Define what the limited memory class of machines are.
  - 4.1.7 Explain how the "Theory of Mind" machines are for the future and are different from reactive and limited memory machines
  - 4.1.8 Explain how machines with self-awareness are the final future step of AI

#### Domain 5: Machine Learning in AI

- 5.1: How does Machine Learning fit into AI

- 5.1.1 Define machine learning
- 5.1.2 Describe how artificial intelligence applies machine learning
- 5.1.3 Identify the five stages of machine learning training
- 5.1.4 Explain how data collection is the first step in ML
- 5.1.5 Identify examples of machine learning
- 5.1.6 Explain how machine learning works
- 5.1.7 Identify the three functions of a machine learning systems (descriptive, predictive and prescriptive)
- 5.2: Describe three categories of machine learning
  - 5.2.1 Define supervised learning
  - 5.2.2 Define unsupervised learning
  - 5.2.3 Define reinforcement learning
  - 5.2.4 Describe how machines use data differently in each category of machine learning

## Domain 6: AI and Robotics

- 6.1: AI and Robotics Together
  - 6.1.1 Explain how is AI and robots work together
  - 6.1.2 Identify examples of robots that use AI
  - 6.1.3 Describe how robots use AI accomplish tasks
  - 6.1.4 Explain how robots help people in different areas of life
  - 6.1.5 Identify different types of robots
  - 6.1.6 Define what a robot is

## Domain 7: The Future of AI and Careers

- 7.1: The Future of AI
  - 7.1.1 Explain why the "Theory of Mind" AI will be in the future
  - 7.1.2 Explain how AI will help solve problems
  - 7.1.3 Define deep neural networks
- 7.2 Describe some careers in AI
  - 7.2.1. Identify careers that use AI
  - 7.2.2 Explain some soft skills that people in AI careers will need to be successful
  - 7.2.3 Explain ways career fields will be impacted by AI
  - 7.2.4 Describe the skills and background needed to have a career in AI
  - 7.2.5 Describe Career Paths in AI
  - 7.2.6 Identify some companies that hire AI Professionals

## Domain 8: Legal and Ethical considerations

- 8.1.1 Identify what ethical considerations will need to continue to be addressed in AI in the future
- 8.1.2 Explain some security issues that arise with AI
- 8.1.3 Explain what "algorithmic bias" means.
- 8.1.4 Describe how training data affects the accuracy of supervised machine learning
- 8.1.5 Identify privacy issues involved with AI
- 8.1.6 Explain how culture, beliefs and religion can create bias/conflict in AI
- 8.1.7 Define what ethical guidelines, organizations and principles that govern them