NANYANG POLYTECHNIC

Course Title: Introduction to AI and Machine Learning

Course Synopsis:

This course introduces learners to Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL) fundamentals and how AI and ML may help to address various business needs. The types and techniques of ML and the ML modeling process will also be covered. Use cases and activities will be introduced to enhance thinking capabilities, and practical sessions will be conducted for learners to implement ML solutions.

Learning Objectives:

At the end of the course, learners will be able to:

1. Understand the basics of AI, ML, DL
2. Know the ML types and techniques and understand how they work
3. Appreciate the applications of AI/ML in addressing various business needs

Topics Include:

- Overview of AI, ML, and DL
- Types of ML
- ML techniques
- ML use case and practical session

Machine Learning Platform/Software:

- Microsoft Excel
- Google Teachable Machine
- Orange

Pre-requisite:

- Basic IT skills and knowledge are required, such as Internet surfing, Microsoft Excel, and registering with Microsoft Azure using an email account. No programming background is needed.

Course Duration: 7 hours

Course Programme:

Time	Programme
0900 - 1000	**1. What is Artificial Intelligence (AI)** 1.1. History of AI 1.2. AI Technologies 1.3. AI Applications
1000 – 1015	**Tea/Coffee Break**
1015 – 1215	**2. What is Machine Learning (ML)** 2.1. Type of ML - Supervised, Unsupervised, and Reinforcement Learning 2.2. Classification 2.3. Regression 2.4. Clustering
1215 – 1315	**Lunch**
1315 – 1500	**3.** What is Deep Learning (DL) 3.1. History of DL 3.2. Artificial Neural Networks
1500 – 1515	**Tea/Coffee Break**
1515 – 1700	**4. Applications of AI and ML** 4.1. Why Deep Learning 4.2. Convolutional Neural Networks 4.3. Autoencoders 4.4. Generative Adversarial Networks 4.5. Transformers
1700 – 1730	Conclusion and Q&A session

Activities

1. Activity 1: Creating an Object Recognition Model
2. Activity 2: Regression Models in Machine Learning
3. Activity 3: Familiarization with low-code machine learning platform