



<https://m2mtechconnect.com>

# Data Science, Machine Learning, Artificial Intelligence Curriculum:

**Confidential** - *This document is a proprietary resource of M2M Tech Inc. This is a customized curriculum specifically focussed on the Industry needs. We will be constantly working on adjusting the curriculum as needed by relevant companies (e.g. use datasets from interested companies/sectors).*

## About

At [M2M Tech](#), our goal is to upskill Canadians with STEM skills & connect with relevant STEM job opportunities/projects in Emerging Tech (Data Science, ML, AI, VR/AR) skills sought after in CleanTech, Advanced Manufacturing, Business Intelligence, Finance and Healthcare sectors.

Since 2019, we have created more than 500+ STEM courses focussed on Emerging Tech skills with 6000+ successful course enrollments. Our team is 100% Canadian and our program participants are 100% Canadian audience who have chosen to upskill themselves. Our audience base is spread all across Canada.

Lots of students have provided their feedback directly [in our courses](#) and few of them left us great reviews in Google too. Please check [here](#).



# Curriculum: (Total ~ 180 hours)

- **Data Analysis: (Time Commitment: 25 hours)**
  - Introduction to data analysis and its importance
  - Introduction to NumPy: Arrays, numerical operations and data manipulation
  - Introduction to Pandas: DataFrames, data cleaning, filtering, grouping and merging. Techniques for data preprocessing and feature engineering
  - Exploratory data analysis (EDA) using Python libraries such as NumPy, Pandas
- **Data Visualization: (Time Commitment: 25 hours)**
  - Principles and best practices of data visualization
  - Visualization techniques using Python libraries like Bokeh
  - Creating informative and visually appealing plots, charts and dashboards
  - Visualizing process data, quality control metrics and production trends
- **No Code, Visual Machine Learning: (Time Commitment: 20 hours)**
  - Overview of No Code and Low Code platforms
  - Understanding the advantages of visual tools in data analysis
  - Classification with Visual Machine Learning
  - Regression Analysis Using Visual Tools
  - Clustering and Unsupervised Learning
- **Reinforcement Learning: (Time Commitment: 30 hours)**
  - Introduction to reinforcement learning and its applications
  - Understanding the Markov Decision Process (MDP) framework
  - Implementation of reinforcement learning algorithms such as Q-learning
  - Applying reinforcement learning to optimize processes, scheduling and resource allocation



- **Supervised Machine Learning: (Time Commitment: 30 hours)**
  - Understanding supervised learning and its applications
  - Regression techniques for predicting parameters, quality metrics and performance indicators
  - Classification algorithms for fault detection, anomaly detection and predictive maintenance
  - Decision tree-based methods for decision support and process optimization
  
- **Unsupervised Machine Learning: (Time Commitment: 30 hours)**
  - Introduction to unsupervised learning and its applications
  - Clustering algorithms for grouping similar processes, products or components
  - Dimensionality reduction techniques for feature extraction and visualization
  - Outlier detection and anomaly identification in data
  
- **Neural Networks: (Time Commitment: 30 hours)**
  - Fundamentals of neural networks and their applications
  - Building neural network models using libraries like TensorFlow, Keras
  - Deep learning for image recognition, defect detection and quality control
  - Transfer learning and model fine-tuning for specific applications