Machine Learning with Python

- Python (4 hrs)
  - Basic Data Types
    - Numerical Types
      - Integer
      - Floats
      - Complex
      - Booleans
    - Natively Implemented Arithmetic Operations
    - Containers
      - Lists
      - Sets
      - Tuples
    - String
    - Dictionaries
  - Working with Assignment Operator
  - Control Flow
    - If
    - Elif
    - Else
    - For / Range
    - While / Break / Continue
  - Advanced Iteration
  - Functions
    - Function Definition
    - Return Statement
    - Parameters

- Numpy for Machine Learning (2 hrs)
  - Importing Conventions
  - Creating Arrays
    - 1-D Array (Dimension & Shape)
    - 2-D and 3-D Array
  - Functions for Creating Arrays
    - Evenly Spaced
    - Number by Points
  - Common Arrays
    - Zeros
    - Ones
  - Basic Data type
  - Indexing and Slicing

- Matplot for Machine Learning (1.5 hrs)

    - Importing Convention
    - Simple Graph
    - Plot Function & Show Function
    - Title of Graph
    - X and Y Label
    - Adding another co-ordinate
    - Working with Legends
    - Changing colors and line width
    - Types of Plot
        - Regular Plot
        - Scatter Plot
        - Bar Plot

- Intro to Machine Learning (1 hr)
    - What is machine learning
    - Application of Machine Learning
    - Types of Machine Learning
    - Supervised Machine Learning
    - Unsupervised Machine Learning
    - Reinforcement Learning

- Key Machine Learning Terms (1 hr)
    - Data
    - Data types
    - Record
    - Data Set
    - Structured Data
    - Unstructured Data
    - Data Exploration
    - Data Mining
    - Descriptive Analytics
    - Predictive Analytics
    - Training Data
    - Test / Evaluation Data

- How to choose an Algorithm (30 min)
    - Accuracy
    - Training time
    - Linearity
    - Number of parameters
    - Number of features

- Working with Spyder (30 min)
    - Setting up the environment
    - Configuring the file explorer

- Importing Libraries (30 min)
    - Numpy
    - Matplot
    - Pandas

- Working with Datasets (1 hr)
    - Importing of Data Set
    - Splitting the data sets
    - Training Data o Test Data

- Models (2 hrs)
    - What is Machine Learning Model?
    - Creation of Model
    - Training of Model
    - Predicting

- Linear Regression Algorithm (3 hrs)
    - Understanding Theory of Algorithm
    - Maths behind Algorithm
    - Practical Implementation

- Multiple Linear Regression Algorithm (3 hrs)
    - Understanding Theory of Algorithm
    - Maths behind Algorithm
    - Practical Implementation

- Decision Tree Algorithm (3.5 hrs)
    - Understanding Theory of Algorithm
    - Maths behind Algorithm
    - Practical Implementation

- Naïve Bayes Algorithm (3.5 hrs)
    - Understanding Theory of Algorithm
    - Maths behind Algorithm
    - Practical Implementation

- KNN Algorithm (3.5 hrs)
    - Understanding Theory of Algorithm
    - Maths behind Algorithm
    - Practical Implementation

- Support Vector Machine (3 hrs)
    - Understanding Theory of Algorithm
    - Maths behind Algorithm
    - Practical Implementation

- K-Means Clustering (3.5 hrs)
    - Understanding Theory of Algorithm
    - Maths behind Algorithm
    - Practical Implementation

- Getting Started with Azure Machine Learning(3 hrs)
    - What is Azure Machine Learning Studio?
    - Setting up of environment
    - Quick Tour of Azure ML Studio
    - What's an Experiment?
    - Components of Experiment
    - Dataset
    - Modules

- Hands on Azure ML (10 hrs)
    - Working with Algorithm
    - Managing Workspace
    - Importing of Data
    - Data Pre-processing
    - Visualisation and Analysing of Dataset
    - Splitting of Dataset into training and Testing set
    - Configuring the Model
    - Evaluation of Model