**Section -1**

1. ML (2 hrs)
   1. Area Classification
      1. DS/ML/AI – ML?
      2. Uns, Sup, Rein
         1. Classification/ regressions
      3. ML Applications - 5 different industry points (forecasting, … etc)
      4. Metrics - accuracy, precision, recall, bias, variance…

**Quiz 1**

* 1. Data Pre-Processing
     1. Types of measurements (Continous, discreate, interval….)
     2. Types of variabls classification (ordinal/ cardinal/ nominal…)
        1. Examples temp? nom/card?. Counting ppl ?
     3. Concept of corellation
     4. EDA (Pie, chart, )
     5. Feature eng basics (data missing, data bias…)
     6. Feature selections (sampling, statistical tests chart)

**Quiz 2**

**Section -2**

1. Applied ML
   1. Concept of gradient decent
   2. Algorithms - concepts
   3. ensembling learning
   4. Hands on Scikit-learn – K-Means, KNN, SVM, ( DT, RM, XGB)
   5. How to design a ML project, explain

**Quiz 3**

**Section -3**

1. Predictive - AI ( 2 hrs)
   1. What is a MLP Network
   2. Evolution of AI Models (1 hr)
      1. Imagenet Competetion - models
   3. What is a CNN model
      1. Layers
      2. Types of Activations, Loss Functions
      3. Image applications
         1. Binary Classification
         2. Multi-Class Classification
         3. Segmentation
            1. Instance
            2. Semantic
         4. Keypoint Detection

**Section - 4**

1. Applied AI
   1. Hands-on PyTorch - Image Classifier (1 hr)
      1. Labelme Image annotation tool
      2. Hyper parmeter Tuning (make each row of people run with different set of parameters)

**Section -5**

1. Generative - AI
   1. Text generation - GPT Api, Huggingface ..etc
   2. Image generation
      1. Dalle, Mid journey, stable diffusion
   3. Multimodals
      1. Concept of an Embedding
      2. Clip, Blip ..etc

**Quiz 4**

1. DS Careers & Road Map (30 Min)
2. Computer Vision in Industries (30Min )
3. Robotics / Mechatronics projects journey (30 Min)

**Final Quiz**