**Module 1**

VCD dimension proofs

**Module 2**

dimensionality reduction

model selection and generalization

filter method and wrapper methods.

LDA

PCA Problem and theory

**Module 3**

Linear Regression problems

Decision tree problem given (root node detection)

Hard margin SVM and Soft margin SVM

**Module 4**

K-Means Algorithm and problem

Single linkage, Complete Linkage, Average linkage

naïve bayes classification problem

KNN problem.

**Module 5**

Convolutional Neural Network

Gradient descend method and types

ANN theory and problems

Recurrent Neural network

Radial Basis Function Network