

Machine Learning	
Session 1: Introduction to Machine Learning	
✓ Introduction to Machine Learning and its uses	✓ Supervised and Unsupervised Learning
✓ Understanding Working Environment in MC	✓ Numpy, Matplotlib, Pandas, Scikit-Learn
Session 2: Linear Regression and Linear Algebra	
✓ Model Representation, Cost Function, Gradient Descent	✓ Gradient Descent for Linear Regression
✓ Matrices and Vectors, Addition and Scalar Multiplication, Inverse and Transpose	✓ Setting up your programming assignment environment, Installing Octave on Windows
✓ Gradient Descent for Multiple Variables, Features of Polynomial Regression, Normal Equation	✓ Normal Equation Noninvertibility
Session 3: Logistics Regression	
✓ Classification of Logistics Regression	✓ Hypothesis Representation, Decision Boundary
✓ Cost Function, Simplified Cost Function	✓ Gradient Descent, Advanced Optimization
Session 4: Regularization	
✓ The Problem of Overfitting, Cost Function	✓ Regularized Linear Regression & Logistic Regression
Session 5: Getting Started with Anaconda	
✓ Downloading and Installing Anaconda	✓ Managing Environment, Navigating with Spyder and Jupyter Notebook Interface
✓ Downloading the IRIS Datasets	✓ Data Exploration and Analysis
Session 6: Support Vector Machine (SVM)	
✓ Introduction to Support Vector Machine	✓ Support Vector Machine Concepts
✓ Linear SVM Classification, Polynomial Kernel	✓ Gaussian Radial Basis Function
✓ Support Vector Regression	✓ Advantages and Disadvantages of SVM
Session 7: Tree	
✓ Decision Tree, Visualizing a Decision Trees	✓ Decision Tree Learning Algorithm
✓ Decision Tree Regression, Overfitting and Grid Search	✓ Loading and Processing Data and Modeling
Session 8: Ensemble Machine Learning	
✓ Introduction to Ensemble Machine Learning	✓ Bagging, Random Forests, Extra Trees
✓ AdaBoost, Gradient Boosting Machine, XGBoost	✓ Human Resources Analytics in Machine Learning
Session 9: k-Nearest Neighbors (kNN)	
✓ Introduction to kNN and its Concepts	✓ kNN and IRIS Dataset Demo, Distance Metric
✓ Introduction to Cancer Detection Project	
Session 10: Dimensionality Reduction	
✓ Dimensionality Reduction Concept	✓ PCA Introduction, Kernel PCA
✓ LDA & Comparison between LDA and PCA	
Session 11: Unsupervised Learning: Clustering	
✓ Clustering Concepts, MLExtend	✓ Ward's Agglomerative Hierarchical Clustering
✓ Truncating Dendrogram, k-Means Clustering	✓ Elbow Method, Silhouette Analysis, Mean Shift
Session 12: Artificial Neural Networks	
✓ The neuron, The Activation Function	✓ How do Neural Networks work
✓ Gradient Descent, Stochastic Gradient Descent	✓ Back propagation, How to get the dataset
Session 13: Project	
✓ Working with Machine Learning Projects	