NIELIT, Gangtok

Course Title : "Introduction to Machine Learning using Python"

(Course duration: 60 hours i.e. 6 hours/day * 2 weeks or 3 hours/day * 4 weeks)

Sl.No.	Week	Topic	Theory (in hours)	Practical (in hours)	Tutorial (in hours)
1	Day-1 (Introduction to Python –I)	Basics Data Types, Conditional Statements, Looping, Control Statements, String, Collections (List, Tuples & Dictionary Manipulations)	2	4	-
2	Day-2 (Introduction to Python – II)	Python Functions, Modules And Packages, Input and Output Object Oriented Programming, Regular Expressions, Exception Handling	2	4	-
3	Day-3 (Data Analysis & visualization using Python)	Data analysis and visualization using Scientific computing libraries – pandas, numpy, & scipy Visualization libraries - matplotlib, seaborn Algorithmic libraries – scikit-learn, statsmodels	2	4	-
4	Day -4 (Introduction to Machine Learning)	Introduction to Machine Learning and its applications	1	-	2
		Steps in involved in Machine Learning & different Learning methods	1	-	
		Hypothesis space and inductive bias	1	-	
		Evaluation and cross validation	1	-	
5	Day-5 (Supervised Learning- Linear Regression and Decision Trees)	Linear Regression	1		2
		Decision Trees	1		
		Problems of Overfitting & Underfitting	1		
		Python exercise on Decision Tree and Linear Regression		1	
6	Day-6 (Supervised Learning- k Nearest Neighbour)	k- Nearest Neighbour	1		1
		Feature selection	1		
		Feature Extraction	1		
		Collaborative filtering	1		
		Python exercise on kNN and PCA (Principal Component Analysis)		1	
7	Day-7 (Supervised Learning - Classification)	Bayesian Learning	1		2
		Naïve Bayes	1		
		Bayesian Network	1		
		Python exercise on Naïve Bayes		1	

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8	Day-8 (Supervised Learning through Logistic Regression and Support Vector Machine)	Logistic Regression	1		2
		Introduction to Support Vector Machine	1		
		Python exercise on SVM		2	
9	Day-9 (Introduction to Neural Networks)	Introduction to Neural Network	1		2
		Backpropagation algorithm	1		
		Deep Neural Network	1		
		Python exercise on Neural Network		1	
10	Day-10 Unsupervised Learning	Introduction to Clustering	1		1
		Kmeans Clustering	1		
		Python exercise on kmeans Clustering		2	
		Wrap- up session	1		
		Total Hours	**28**	**20**	**12**