

I. Introduction and Concept of Learning (ML1)		Prof. Pabitra Mitra	
<ul style="list-style-type: none"> The learning problem Various parameters in learning General-to-specific hypotheses ordering. Find-S and Candidate Elimination algorithm. Version space and inductive bias. 	2 hours	Week 1	22.08.2022 (16:00-18:00)
II. Statistical Learning (ML2)		Prof. Monalisa Sarma	
<ul style="list-style-type: none"> Probability distribution functions Sampling distribution functions Hypothesis testing Analysis of variance 	8 hours	Week 1	23.08.2022 (15:00-17:00) 24.08.2022 (10:00-12:00) (15:00-17:00) 26.08.2022 (15:00-17:00)
II. Relation Analysis (ML3)		Prof. Debasis Samanta	
<ul style="list-style-type: none"> Correlation analysis Regression analysis Logistic Regression 	6 hours	Week 2	29.08.2022 (15:00-17:00) 31.08.2022 (10:00-12:00) (15:00-17:00) 02.09.2022 (10:00-12:00)
V. Bayesian Learning (ML4)		Prof. Debasis Samanta	
<ul style="list-style-type: none"> Probability Overview. Naive Bayes Classifier. Gaussian Naive Bayes Classifier. 	2 hours	Week 2	02.09.2022 (10:00-12:00)
V. Distance-based Learning (ML5)		Prof. Pabitra Mitra	
<ul style="list-style-type: none"> K-Nearest Neighbour (kNN) Classifier. Voronoi Diagram and Distance-Weighted kNN. Distance Metrics and Curse of Dimensionality. Computational Complexity: Condensing and High Dimensional Search (kd-tree). 	2 hours	Week 2	02.09.2022 (15:00-17:00)
VI. Decision Tree Learning (ML6)		Prof. Debasis Samanta	
<ul style="list-style-type: none"> Decision Tree Representation and Learning Algorithm (ID3). Attribute Selection using Entropy Measures and Gains. Hypotheses Space and Inductive bias. Overfitting, Generalization and Occam's razor. Extensions: Continuous-valued Attributes, Alternative Attribute Selection Measures. 	4 hours	Week 3	05.09.2022 (15:00-17:00) 06.09.2022 (15:00-17:00) 07.09.2022 (10:00-12:00)

VII. Support Vector Machine (ML7)		Prof. Alok Kanti Deb	
<ul style="list-style-type: none"> Decision Boundary and Support Vector: Optimization and Primal-Dual Problem. Extension to SVM: Soft Margin and Non-linear Decision Boundary. Kernel Functions and Radial Basis Functions 	4 hours	Week 3	09.09.2022 (10:00-12:00) (15:00-17:00)
VIII. Ensemble Classification (ML8)		Prof. Pabitra Mitra	
<ul style="list-style-type: none"> Bagging and Boosting. Adaboost and Random Forest. 	2 hours	Week 4	12.09.2022 (15:00-17:00)
IX. Classifier/ Hypothesis Evaluation (ML9)		Prof. Debasis Samanta	
<ul style="list-style-type: none"> Accuracy, Precision, Recall and F-Measures. Scores, Sampling, Bootstrapping and ROC. Hypotheses testing and Cross-validation. 	2 hours	Week 4	13.09.2022 (15:00-17:00)
X. Unsupervised Learning: Clustering (ML10)		Prof. Debasis Samanta	
<ul style="list-style-type: none"> Partitional Clustering and Hierarchical Clustering. Cluster Types, Attributes and Salient Features. K-Means, Hierarchical and Density-based Clustering Algorithms. Inter and Intra Clustering Similarity, Cohesion and Separation. MST and DBSCAN Clustering Algorithms. 	4 hours	Week 4	14.09.2022 (10:00-12:00) 16.09.2022 (10:00-12:00) (15:00-17:00)