

**SWARNANDHRA
COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
SEETHARAMPURAM, NARSAPUR-534280, WG- DT, AP
DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS**

TEACHING PLAN

Course Code	Course Title	Year / Sem.	Branch	Contact Hr/ week	Academic Year
20MC3T01	Machine Learning with Python	II/III	MCA	5	2021-22

Course Objectives:

1. To learn patterns and concepts from data without being explicitly programmed in various IOT nodes.
2. To design and analyze various machine learning algorithms and techniques with a modern outlook focusing on recent advances.
3. Explore supervised and unsupervised learning paradigms of machine learning.
4. To explore Deep learning technique and various feature extraction strategies.

Course Outcomes (COs): At the end of the course, student will be able to

1. Illustrate and comprehend the basics of Machine Learning with Python
2. Demonstrate the algorithms of Supervised Learning and be able to differentiate linear and logistic regressions
3. Demonstrate the algorithms of Unsupervised Learning and be able to understand the clustering algorithms
4. Evaluate the concepts of binning, pipeline Interfaces with examples
5. Apply the sentiment analysis for various case studies

Week No	Outcomes	Blooms Level 1	TOPIC/ACTIVITY	Text books	Contact hours	Delivery Method
			Unit I			
			1.1 Introduction to Machine Learning	T1	1	

1 2 3	Illustrate and comprehend the basics of Machine Learning with Python	K2	1.2	Basic Terminology	T1	1	Chalk & Board, PPT Programming Demonstration		
			1.3	Types of Machine Learning and Applications	T1	1			
			1.4	Installing Python and packages	T1	1			
			1.5	Installing packages	T1	1			
			1.6	Introduction to NumPy	T1	1			
			1.7	SciPy	T1	1			
			1.8	Matplotlib	T1	1			
			1.9	Scikit-learn	T1	1			
			1.10	Tiny application of Machine Learning	T1	1			
4 5 6	Demonstrate the algorithms of Supervised Learning and be able to differentiate linear and logistic regressions	K2	Unit II				Chalk & Board, PPT Programming Demonstration		
			2.1	Types of Supervised Learning	T1	1			
			2.2	k-Nearest Neighbors	T1	2			
			2.3	Linear Models	T1	1			
			2.4	Naive Bayes Classifiers	T1	2			
			2.5	Decision Trees	T1	2			
			2.6	Ensembles of Decision Trees	T1	2			
			2.7	Kernelized Support Vector Machines	T1	2			
2.8	Uncertainty Estimates from Classifiers	T1	1						
7	Demonstrate the algorithms of Unsupervised Learning and be able to understand the clustering algorithms	K2	Unit III				Chalk & Board, PPT Programming Demonstration		
			3.1	Types of Unsupervised Learning	T1	1			
			3.2	Unsupervised Learning challenges	T1	1			
			3.3	Preprocessing and scaling	T1	1			
			3.4	Dimensionality Reduction	T1	1			
			3.5	Feature Extraction	T1	1			
			MID EXAM-I						
			3.6	Manifold Learning	T1	1			
3.7	K-Means Clustering	T1	1						

8 9			3.8	Agglomerative Clustering	T1	2	
			3.9	DBSCAN	T1	2	
			3.10	Comparing Clustering Algorithms	T1	2	
			3.11	Evaluating Clustering Algorithms	T1	2	
10 11 12	Evaluate the concepts of binning, pipeline Interfaces with examples	K5	Unit IV				Chalk & Board, PPT Programming Demonstration
			4.1	Categorical Variables	T1	1	
			4.2	Binning	T1	1	
			4.3	Discretization	T1	1	
			4.4	Linear Models	T1	2	
			4.5	Trees	T1	1	
			4.6	Interactions and Polynomials	T1	2	
			4.7	Univariate Nonlinear Transformations	T1	1	
			4.8	Automatic Feature Selection	T1	2	
			4.9	Parameter Selection with Preprocessing	T1	1	
			4.10	Building Pipelines	T1	1	
			4.11	The General Pipeline Interface	T1	1	
13 14	Apply the sentiment analysis for various case studies	K3	Unit V				Chalk & Board, PPT Programming Demonstration
			5.1	Types of Data Represented as Strings	T1	1	
			5.2	Sentiment Analysis of Movie Reviews	T1	2	
			5.3	Representing Text Data as a Bag of Words	T1	1	
			5.4	Stop Words	T1	1	
			5.5	Rescaling the Data with tf-idf	T1	2	
			5.6	Investigating Model Coefficients	T1	1	
			5.7	Approaching a Machine Learning Problem	T1	2	
			5.8	Testing Production	T1	2	

			Systems			
		5.9	Ranking	T1	1	
		5.10	Recommender Systems and Other kinds of Learning	T1	2	
MID EXAM-II						
Total Classes - 65						

Text Books:

1. Andreas C. Muller & Sarah Guido, Introduction to Machine Learning with Python: A Guide for Data Scientists, Orielly Publications, 2019
2. Sebastian Raschka & Vahid Mirjalili, Python Machine Learning, Packt Publishing Limited; 3rd edition, 2019
3. Luis Pedro Coelho, Willi Richert, Building Machine Learning Systems with Python, Packt Publishing , 2nd Edition, 2015

Reference Books:

1. Tom M. Mitchell, Machine Learning, , Mc Graw-Hill Publication, First Edition, 2017


Faculty


Head of the Department


Principal