GUJARAT TECHNOLOGICAL UNIVERSITY

BACHELOR OF ENGINEERING SYLLABUS

Minor Degree : DATA SCIENCE

Subject Code : 115AT01

Subject Name : Introduction to AI and ML

WEF Academic Year :	2022-23
Semester :	5
Category of the Course :	Compulsory

Course Objective :

- To understand basics of machine learning in data science.
- To understand various basic machine learning algorithm that can be used with various type of data.

Course Scheme :

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
				Theory		Practical		
L	T	PR	C	ESE (E)	PA(M)	ESE (V)	PA (I)	
3	0	2	4	70	0	30	0	100

Course Content :

Sr. No.	Course Content	No. of Hours
1	**Module 1 :** Linear Regression: Basic facts of linear regression, implementation of linear regression, case studies of linear regression using data set.	6
2	**Module 2 :** Logistic Regression: Basic facts and implementation of logistic regression, solve a case study to predict output using existing data set.	8
3	**Module 3 :** Clustering and Principle Component Analysis: K means and hierarchical clustering, how to make market strategies using clustering, recommendation and PCA.	11
4	**Module 4 :** Support Vector Machine: basics of SVM and use it to detect the spam emails and recognize alphabets.	9
5	**Module 5 :** Model Selection and advanced regression: use of Lasso and Ridge.	8
	Total	**42**

Text Books/References :

1. Machine Learning using Python , U Dinesh Kumar and Manaranjan Pradhan, John Wiley & Sons.
2. Advanced Data Analytics Using Python: With Machine Learning, Deep Learning by By Sayan ukhopadhyay, Apress.
3. Practical Data Mining" by Monte F. Hancock, Auerbach Publication.
4. "Machine Learning for Absolute Beginners: A Plain English Introduction (Second Edition)" by Oliver Theobald.
5. Practical Data Science with R, Nina Zumel, John Wiley & Sons.
6. Python for Data Science for Dummies, John Paul Mueller, Luca Massaron, John Wiley & Sons.
7. Big Data and Analytics, Seema Acharya and Subhashini Chellappan, Wiley Publication.

Course Outcomes: After completion of course, students would be able :

1. To explain how data is collected, managed and stored for data science.
2. To use various type of Machine learning model.
3. To implement various ML algorithms on data models.

List of Laboratory/Learning Resources Required :

1. Use python to predict employee attrition in a firm and help them plan their manpower. (take data set from kaggle).
2. Create customer clusters using different market strategies on a data set.
3. Make a movie recommendation system.
4. Develop a prediction mechanism to predict which employee can go on leave in a company in near future.
5. Recognizing alphabets using SVM.

* * * * * * *