



Course: BTech

Semester: 6

**Prerequisite:** Data structure, automata, and languages, Mathematics, Python | 203105101 - Fundamentals of Programming**Rationale:** This course provides a broad introduction to Artificial Intelligence. AI techniques for search and knowledge representation also apply knowledge of AI planning and machine learning techniques to real-world problems.**Teaching and Examination Scheme**

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
0	0	2	0	1	-	-	20	-	30	50

SEE - Semester End Examination, CIA - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

**Course Outcome****After Learning the Course the students shall be able to:**

1. Discover the basic issues and challenges in Machine Learning including data and model selection and its complexity
2. Understand the underlying mathematical relations within and across Machine Learning algorithms
3. Assess the different Supervised Learning algorithms using a suitable Dataset.
4. Evaluate the different unsupervised Learning algorithms using a suitable Dataset.
5. Design and implement different machine learning algorithms in a range of real-world applications.

**List of Practical**

1.	Dealing with Data using Numpy, Pandas, Statistics library
2.	Data Analysis & Visualization on Diwali Sales Dataset.
3.	Implement linear regression and logistic regression.
4.	Implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering a few test data sets.
5.	Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task.
6.	Decision tree-based ID3 algorithm.
7.	Write a program to implement the K-Nearest Neighbor algorithm to classify the iris data set
8.	Apply EM algorithm to cluster a set of data stored in a .CSV file. Use the same data set for clustering using k-Means algorithm.
9.	Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set.
10.	Compare the various supervised learning algorithm by using appropriate dataset. (Linear Regression, Support Vector Machine, Decision Tree)
11.	Compare the various Unsupervised learning algorithm by using the appropriate datasets. (K Means Clustering, K Mode)
12.	Build an Artificial Neural Network by implementing the Backpropagation algorithm and test the same using appropriate data sets