

<b>Branch Name:</b>	MCA
<b>Program Code:</b>	CS201
<b>Course Title</b>	Machine Learning
<b>Course Code</b>	3CS2010304T
<b>Pre-requisite Course:</b>	Basics of computer science including algorithms, data structure, probability theory

**Course Objective:**

1. To learn various machine learning algorithms & their area of applications.
2. To learn the process of formulating & solving real world problems using machine learning.
3. To learn the implementation of various decision making problems using machine learning.

**Teaching and Examination Scheme:**

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
4	-	-	4	60	40	-	-	100

**Course Contents:**

Unit No	Topics	Total Hours	Weightage (%)
<b>1</b>	<b>Introduction to Machine Learning:</b> Introduction to Machine Learning: Overview of Human Learning and Machine Learning, Types of Machine Learning, Applications of Machine Learning , Tools and Technology for Machine Learning.	5	10
<b>2</b>	<b>Preparing to Model</b> Preparing to Model: Machine Learning activities, Types of data in Machine Learning, Structures of data, Data quality and remediation, Data Pre-Processing: Dimensionality reduction, Feature subset selection. <b>Feature Engineering</b> Basics of Feature Engineering: Feature and Feature Engineering, Feature transformation: Construction and extraction, Feature subset selection : Issues in high-dimensional data, key drivers, measure and overall process	10	20
<b>3</b>	<b>Modeling and Evaluation</b> Selecting a Model: Predictive/Descriptive, Training a Model for supervised learning, model representation and interpretability, Evaluating performance of a model, Improving performance of a model.	10	20
<b>4</b>	<b>Supervised Learning: Classification and Regression:</b> Example of Supervised Learning, Classification Model, Classification Learning Steps, Common Classification Algorithms Example of Regression, Common regression Algorithms	11	25

<b>5</b>	<p><b>Unsupervised Learning:</b> Unsupervised Learning versus Supervised Learning, Applications of Unsupervised Learning, Clustering, Finding Pattern using Association Rules <b>Neural network</b> Introduction to neural network, Biological and Artificial Neurons, Types of Activation functions, Implementation of ANN</p>	12	25
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**Text Books:**

1. Saikat Dutt, Subramanian Chandramouli, Amit Kumar Das , “Machine Learning”, Pearson Education

**References Books:**

1. Tom M Mitchell, “Machine Learning”, McGraw Hill,
2. Anuradha Srinivasaraghavan, Vincy Joseph, “Machine Learning”, Wiley India
3. Peter Harrington, Machine Learning in Action, DreamTech

**Course Learning Outcomes (CLO): On completion of this course, the students will be able to:**

CLO	Description	Bloom’s Taxonomy Level
CLO1	Understanding Various Machine Learning Algorithms & Their Area of Applications	1 Remembering 2 Understanding
CLO2	Explain the Process of Formulating & Solving Real World Problem using Machine Technology	1 Remembering 2 Understanding 3 Applying
CLO3	Design and Implement various Decision Making Problems using Machine Learning	3 Applying 4 Analyze 5 Evaluate 6 Create

**Mapping of CLOs with POs & PSOs**

Course Learning Outcomes	Program Out comes ( POs)												Program Specific Outcomes (PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CLO1	H	M	H	M	L	M	M	L		L	H	H	H	H
CLO2	M	H	H	H	H	M	M	L		L	M	L	H	H
CLO3	M	M	M	M	M	M		L		M	M	L	H	H

**H:High, M:Medium, L:Low**