SCHEME OF COURSE WORK

Department of Computer Science and Engineering

CSM(Artificial Intelligence and Machine Learning)

Course Details:

COURSE TITLE	Machine Learning-I		
COURSE CODE	22CM1104	L T P C	3 0 0 3
PROGRAM	B.TECH		
SPECIALIZATION	CSM		
SEMESTER	IV Semester		
PRE-REQUISITES	Machine Learning-I		
COURSES TO WHICH IT IS A PRE-REQUISITE	Machine Learning		

Course Outcomes (COs):

CO1	Understand the Basics of Learning methods in Machine learning.
CO2	Use various Supervised Learning techniques.
CO3	Apply Statistical approaches for multiple Learning techniques.
CO4	Construct models for Classification.
CO5	Build neural network models

Program Outcomes (POs):

PO 1	Graduates will be able to apply the knowledge of mathematics, science, engineering fundamentals and principles of Computer Science & Engineering to solve complex problems in different domains.
PO 2	Graduates can identify, formulate, study contemporary domain literature and analyze real life problems and make effective conclusions using the basic principles of science and engineering.
PO 3	Graduates will be in a position to design solutions for Engineering problems requiring in-depth knowledge of Computer Science and design system components and processes as per standards with emphasis on privacy, security, public health and safety.
PO 4	Graduates will be able to conduct experiments, perform analysis and interpret data as per the prevailing research methods and to provide valid conclusions.
PO 5	Graduates will be able to select and apply appropriate techniques and use modern software design and development tools. They will be able to predict and model complex engineering activities with the awareness of the practical limitations.
PO 6	Graduates will be able to carry out their professional practice in Computer Science & Engineering by appropriately considering and weighing the issues related to society and culture and the consequent responsibilities.
PO 7	Graduates would understand the impact of the professional engineering solutions on environmental safety and legal issues

PO 8	Graduates will transform into responsible citizens by adhering to professional ethics.
PO 9	Graduates will be able to function effectively in a large team of multidisciplinary streams consisting of persons of diverse cultures without forgetting the significance of each individual's contribution.
PO 10	Graduates will be able to communicate effectively about complex engineering activities with the engineering community as well as the general society, and will be able to prepare reports.
PO 11	Graduates will be able to demonstrate knowledge and understanding of the engineering and management principles and apply the same while managing projects in multidisciplinary environments.
PO 12	Graduates will engage themselves in self and life-long learning in the context of rapid technological changes happening in Computer Science and other domains.

Course Outcomes (CO) versus Program Outcomes (PO)

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3			3	2				1			
CO2	3			2								
CO3	3	2		1								
CO4	3			2								
CO5		3		2	1							

3 - Strongly correlated, 2- Moderately correlated, 1-Poor correlated, Blank - No correlation

Programme Specific Outcomes (PSOs)

PSO1	Design, develop, test and maintain System and Application software in the area of Artificial Intelligence and Machine Learning for varying domains and platforms.
PSO2	Understand the working of related hardware and software for Artificial Intelligence and Machine Learning to design solutions for real time problems.
PSO3	Design the algorithms to model the automation systems for modernizing contemporary societal, Industrial, organizational and public welfare needs with rational insight.

Course Outcomes (CO) versus Programme Specific Outcomes (PSOs)

Course Outcome	PSO1	PSO2	PSO3
CO1	3	1	
CO2	3		
CO3	3		
CO4	3		
CO5	3		

Assessment Methods	Assignment / Quiz / Seminar / Case Study / Mid-Test / End Exam

Teaching- Learning & Evaluation

Week	Topic/ Contents	Course Outcomes	Sample questions	Teaching learning strategy	Assessment method & schedule
1	Introduction to Machine Learning	CO1	1. Explain different ways of data collection. 2. Explain various Well-Posed Machine Learning Problems,	Lecture / PPT	Assignment-1, Test- 1 Quiz-1
2	Diversity of Data	CO1	1. Explain various forms of Learning, 2. Differentiate Structured and Unstructured data	Lecture / PPT	Assignment-1, Test- 1 Quiz-1
3	Supervised Learning	CO2	1.Explain the concept of Learning from Observations. 2.Explain Occam's Razor Principle	Lecture / PPT	Assignment-1, Test- 1 Quiz-1
4	Statistical Learning	CO3	1. Explain Descriptive Statistics in Learning Techniques	Lecture / PPT	Assignment-1, Test- 1 Quiz-1
5	Bayesian Reasoning	CO3	1. Explain k-Nearest Neighbor (k-NN) Classifier.	Lecture / PPT	Assignment-1, Test- 1 Quiz-1
6	Learning with Support Vector Machines	CO2	1. Explain the concept of Regression by Support Vector Machines	Lecture / PPT	Assignment-1, Test- 1 Quiz-1
7	SVM Techniques	CO3	1. Explain various Variants of Basic SVM Techniques.	Lecture / PPT	Assignment-1, Test- 1 Quiz-1
8	Test-1				
9	Decision Tree Learning	CO4	1.Explain with the example of a Classification Decision Tree	Lecture / PPT	Assignment-2, Test- 2 Quiz-2
10	Decision Tree Learning	CO4	1. Explain the concept of Pruning the Tree	Lecture / PPT	Assignment-2, Test- 2 Quiz-2

11	Learning With Neural Networks	CO5	1. Explain about Biological Neuron	Lecture / PPT	Assignment-2, Test- 2 Quiz-2
12	Network Architectures	CO5	1. Explain about Feed forward Networks	Lecture / PPT	Assignment-2, Test- 2 Quiz-2
13	Multi-Layer Perceptron (MLP) Networks	CO4	1. Explain about Multi-Class Discrimination with MLP Networks	Lecture / PPT	Assignment-2, Test- 2 Quiz-2
14	Test-2				
15/15	**END EXAM**				