

SEMESTER III

Course Code	Course name	L	T	P	C
	Elements of AIML	2	0	0	2
Total Units to be Covered: 5		Total Contact Hours: 30			
Prerequisite(s):	Problem Solving Techniques, Probability and Statistical Analysis	Syllabus version: 1.0			

Course Objectives

Students will learn the basic concepts and techniques of Artificial Intelligence and Machine Learning. They will also explore their applications.

Course Outcomes

On completion of this course, the students will be able to

CO1. Understand the basic concepts and techniques of Artificial Intelligence.

CO2. Understand the logic of AI algorithms for solving practical problems.

CO3. Understand the basics of Machine Learning and its types.

CO4. Assess and model real-world practical problems that can be handled by AI and ML.

CO-PO Mapping

Program Outcomes Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	1	1	1										1		
CO 2	1	1	1										1		
CO 3	1	1	1										1		
CO 4	1	1	1										2		
Average	1	1	1										1.25		

1 – Weakly Mapped (Low)

2 – Moderately Mapped (Medium)

3 – Strongly Mapped (High)

“_” means there is no correlation

Syllabus

Unit I: Introduction

6 Lecture Hours

Artificial Intelligence and its applications, Artificial Intelligence Techniques, Level of models, criteria of success, Intelligent Agents, Nature of Agents, Learning Agents. AI Techniques, advantages, and limitations of AI, Impact and Examples of AI, Application domains of AI.

Unit II: Logic for AI

6 Lecture Hours

Propositional logic, predicate logic, Resolution, Resolution in propositional logic and predicate logic, Clause form, unification algorithm

Unit III: Introduction to machine learning

6 Lecture Hours

Introduction to Machine Learning, Usage of datasets and how to handle them for Machine Learning Feature sets, Dataset division: test, train and validation sets, cross validation, Dimensionality Reduction Techniques: PCA, LDA, ICA

Unit IV: Types of machine learning

6 Lecture Hours

Introduction to Machine Learning Techniques: Supervised Learning: Regression and its types, Classification, Unsupervised Learning: Clustering, Reinforcement Learning, Semi-supervised Machine Learning

Unit V: Applications of AI and Machine learning

6 Lecture Hours

AI for society, women and environment, Applications of Machine Learning in Banking, Security, Healthcare, Education, Insurance Industry, Retail and Supply Chain, Transportation and Logistics, Energy and Utilities

Total lecture Hours 30

Textbooks

1. Artificial Intelligence by Rich and Knight, The McGraw Hill, 2017.
2. Machine Learning for Dummies, By John Paul Mueller and Luca Massaron, For Dummies, 2016.

Reference Books

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme

Components	IA	MID SEM	End Sem	Total
Weightage (%)	50	20	30	100

Detailed breakup of Internal Assessment

Internal Assessment Component	Weightage in calculation of Internal Assessment (100 marks)
Quiz 1	15%
Quiz 2	15%
Class Test 1	15%
Class Test 2	15%
Assignment 1/Project	20%
Assignment 2/Project	20%

Course Code	Course name	L	T	P	C
	Elements of AIML Lab	0	0	2	1
Total Units to be Covered:		Total Contact Hours:			
Prerequisite(s):	Python Programming	Syllabus version: 1.0			

Course Objectives

Students will learn the basic concepts and techniques of Artificial Intelligence and Machine Learning using tools and python programming language. They will also explore their applications.

Course Outcomes

On completion of this course, the students will be able to

CO1 Understand the basic concepts and techniques of Artificial Intelligence and Machine Learning Algorithms on tools.

CO2 Explore the data analysis and preparation techniques, the logic of AI algorithms for solving practical problems.

CO3 Understand the basics of Machine Learning and its types.

CO-PO Mapping

Program Outcomes Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1					2								2	1	
CO 2					2								2	1	
CO 3					2								2	1	
Average					2								2	1	

1 – Weakly Mapped (Low)

2 – Moderately Mapped (Medium)

3 – Strongly Mapped (High)

“_” means there is no correlation

List of Experiments

Experiment 1	Exploration of WEKA tool for Regression task.
Experiment 2	Exploration of WEKA tool for Classification task.
Experiment 3	Exploration of WEKA tool for Clustering task.
Experiment 4	Write a python program to import and export data using Pandas and show the details of the dataset like number of rows, columns, first five rows, size, number of missing values, sum, average, min and max values from the numerical columns.
Experiment 5	Using Python language do the exploratory data analysis of dataset imported in the lab 4.
Experiment 6	Implement the missing value, and outlier handling data preprocessing techniques on the dataset imported in lab 4 or any other dataset.
Experiment 7	Implement feature scaling and one hot encoding data preprocessing techniques on the dataset imported in lab 4 or any other dataset.
Experiment 8	Implement Dimensionality reduction using Principal Component Analysis (PCA) method.
Experiment 9	Implement different techniques of handling imbalanced data.
Experiment 10	Write a Python program to demonstrate various Data Visualization Techniques using Matplotlib and Seaborn libraries.

Total Lab hours 15

Textbooks

1. "Data Science for Business" by Foster Provost and Tom Fawcett.
2. "Python for Data Analysis" by Wes McKinney.

Reference Books

1. "Data Wrangling with Python" by Kevin Markham.
2. "Storytelling with Data" by Cole Nussbaumer Knaflic.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme: Continuous Assessment

Components	Quiz & Viva	Performance & Lab Report
Weightage (%)	50	50