w. e. f. Academic Year:	2024-25
Semester:	2nd Semester
Category of the Course:	MOPEC

Prerequisite :	• Basic of computing and fundamental knowledge of problem solving techniques. • Understanding of key concepts related to algorithms.
Rationale:	The "Fundamental of AI" course is designed to provide undergraduate students with a comprehensive foundation in crucial domains of Artificial Intelligence. This interdisciplinary course aims to equip students with fundamental concepts and techniques that are essentially a pre-requisite in today's technology-driven world.

Course Outcome:

After Completion of the Course, Student will be able to:

No	Course Outcomes	RBT Level
01	Learn and enable them to discuss and comprehend AI-related topics.	Remember
02	Understand the fundamental concepts and terminology of Knowledge representation.	Understand
03	Understand the Machine Learning concepts and models to study fundamental problems of computing.	Understand
04	Understand the Deep Learning concepts and its applications for AI.	Understand
05	Apply various AI techniques to study real world scenarios and use cases.	Apply

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				
				Theory		Tutorial / Practical		Total Marks
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
02	00	00	02	70	30	-	-	100

Course Content:

Unit No.	Content	No. of Hours	% of Weigh tage

1.	**Introduction:** • History & overview of Artificial Intelligence • Definition of Artificial Intelligence • Artificial Narrow Intelligence, Artificial General Intelligence, Artificial Super Intelligence • Concepts of Production, Agents and Environments • Characteristic of Intelligent Agents, Concept of Rationality, Nature of Environments.	08	30
2.	**Knowledge Representation:** • Concept of Knowledge representation • Introduction to Natural Language processing • Concept of Pattern recognition • Introduction to Expert systems	06	20
3.	**Basics of Machine Learning:** • Learning from examples • Forms of Learning -Supervised learning, Unsupervised learning, Reinforcement learning • Simple Models –Linear regression, Logistic regression, Support Vector Machines (SVM) etc.	06	20
4.	**Deep Learning:** • Concept of Deep Learning • Introduction to Neural Networks. • Types of Deep Learning models. • Deep leaning applications.	06	20
5.	**Modern Artificial Intelligence**: • Large Language Models (LLMs) • Use-cases: ChatGPT, Gemini, Bhashini, Krutrim etc. • Current Issuess & Future Challenges of AI.	04	10
	Total	**30**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
30	50	20	00	00	00

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

1. Artificial Intelligence: Concepts and Applications by Lavika Goel, Latest Edition, Wiley.
2. Artificial Intelligence by Kevin Knight, Elaine Rich, Shivashankar B. Nair, Latest Edition, Mc-Graw Hill.

3. Understanding Artificial Intelligence: Fundamentals and Applications by Albert Chun-Chen Liu, Oscar Ming Kin Law, Iain Law, Latest Edition Wiley-IEEE Press.
4. Fundamentals of Artificial Intelligence by K.R. Chowdhary, Latest Edition, Springer.
5. Artificial Intelligence A Modern Approach by Stuart J. Russell and Peter Norvig, Latest Edition, Pearson.

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