



Lok Jagruti Kendra University
University with a Difference

Diploma in Electrical Engineering



Course Code:25070605
Artificial Intelligence

Programme / Branch Name		Diploma in Electrical Engineering				
Course Name	Artificial Intelligence				Course Code	025070605
Course Type	HSSC	BSC	ESC	PCC	OEC	PEC

Legends: HSSC: Humanities and Social Sciences Courses BSC: Basic Science Courses
ESC: Engineering Science Courses PCC: Program Core Courses
OEC: Open Elective Courses PEC: Program Elective Courses

1) Teaching and Evaluation Scheme

Teaching Hours / Week / Credits				Evaluation Scheme			
L	T	P	Total Credit	CCE	SEE (Th)	SEE (Pr)	Total
4	0	2	5	50	50	50	150

Legends: L: Lectures T: Tutorial P: Practical
CCE: Continuous & Comprehensive Evaluation
SEE (Th): Semester End Evaluation (Theory)
SEE (Pr): Semester End Evaluation (Practical)

2) Prerequisite

- ✓ Mathematics

3) Rationale

With the usage of Internet and World Wide Web increasing day by day, the field of AI and its techniques are being used in many areas which directly affect human life. Various techniques for encoding knowledge in computer systems such as Predicate Logic, Production rules, Semantic networks find application in real world problems. The fields of AI such as Game Playing, Natural Language Processing, and Connectionist Models are also important. Student should know some programming language for AI.

4) Objectives

- ✓ To acquire knowledge on intelligent systems and agents, formalization of knowledge, reasoning with and without uncertainty, machine learning and applications at a basic level.
- ✓ Knowledge and application of basic principles and techniques of intelligent systems and their practical applications.
- ✓ Identify the type of search strategy (blind/heuristic) that is more appropriate to address a particular problem and implement the selected strategy.

5) Contents

Unit No.	Unit Name	Topics	Learning Outcomes	% Weightage	Hours
1	Introduction to AI	1.1. Definition 1.2. Goal of AI 1.3. History 1.4. Applications	<ul style="list-style-type: none"> • What is AI? • History of development • Where to use with applications. 	30	12
2	Agents and Environment	2.1. Introduction 2.2. Agent types: simple reflex, model-based reflex, goal based 2.3. Structure of agent 2.4. Nature of environment 2.5. Properties of environment	<ul style="list-style-type: none"> • Basic model and types of agents and environment, its structure. 	10	10
3	Search Algorithms	3.1. Terminology 3.2. Uninformed search: Breadth first search, Depth first search 3.3. Heuristic search: Strategies, Local search algorithms 3.4. Comparison of the search algorithms	<ul style="list-style-type: none"> • Types of searches, algorithms, strategies, comparison between search algorithms 	20	12
4	Fuzzy Logic Systems	4.1. History, application, advantages and disadvantages 4.2. Fuzzy logic approach and theory 4.3. Fuzzy system design 4.4. Application example	<ul style="list-style-type: none"> • Definition of fuzzy logic, history, application, approach, design with example 	30	12
5	Neural Networks	5.1. Introduction 5.2. Comparison between brain and computer 5.3. Organization of human brain 5.4. Comparison between artificial and neural network 5.5. Artificial neural networks 5.6. Applications 5.7. Advantages	<ul style="list-style-type: none"> • Definition of neural network, history, application, organization of human brain, types neural networks 	10	10

6) List of Practical / Exercises

The practical/exercises should be properly designed and implemented in an attempt to develop different types of skills that students can acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

Sr. No	Practicals / Exercises	Key Competency	Hours
1	Write a program to implement Tic-Tac-Toe game problem.	Mathematics, AI-Theory	2
2	Write a program to implement BFS	Mathematics, AI-Theory	2
3	Write a program to implement mini-max algorithm for any game development.	Mathematics, AI-Theory	2
4	Write a program to Implement A* Algorithm	Mathematics, AI-Theory	2
5	Study PROLOG language and its function	Mathematics, AI-Theory	2
6	Write simple fact for the statements using PROLOG.	Mathematics, AI-Theory	2
7	Implementation of depth first search for water jug problem	Mathematics, AI-Theory	2
8	Implementation of solve 8-puzzle problem using best first search	Mathematics, AI-Theory	2
9	Implement program to solve N-queen problem	Mathematics, AI-Theory	2
10	Implementation of travelling salesman problem	Mathematics, AI-Theory	2
11	Implement program to solve tower of Hanoi	Mathematics, AI-Theory	2
12	Implement program to solve monkey banana problem	Mathematics, AI-Theory	2
		Total Hours	24

7) Suggested Specification Table for Evaluation Scheme

Unit No.	Unit Name	Distribution of Topics According to Bloom's Taxonomy					
		R %	U %	App %	C %	E %	An %
1	Introduction to AI	40	30	20	-	-	10
2	Agents and Environment	30	30	30	-	10	-
3	Search Algorithms	30	20	30	20	-	-
4	Fuzzy Logic Systems	30	30	20	-	10	10
5	Neural Networks	30	30	20	-	10	10

Legends: R-Remembering C- Creating
 U- Understanding E- Evaluating
 App- Applying An- Analyzing

8) Textbook

- 1) Artificial intelligence by Elaine Rich, Kevin Knight. MGH
- 2) Artificial Intelligence -A Modern Approach by Stuart J. Russell and Peter Norvig, Prentice Hall

9) Reference Books

- 1) Intelligent systems and signal processing in power engineering by A Ukil, Springer
- 2) Introduction to Artificial Intelligence by Nathanael Black, Springer
- 3) A First Course in Artificial Intelligence by Deepak Khemani, MGH

10) Open Sources (Website, Video, Movie)

- 1) <https://nptel.ac.in/courses/106/105/106105077/>
- 2) <http://www.journals.elsevier.com/artificial-intelligence/>