Course Title:	**Introduction To Artificial Intelligence**	Semester	I/II
Course Code:	**BETCK105Q/ BETCK205Q**	CIE Marks	50
Course Type (Theory/Practical/Integrated)	Theory	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	3-0-0-0	Exam Hours	03
Total Hours of Pedagogy	40 hours	Credits	03

Course Learning Objectives

CLO1.Learn the basic principles and theories underlying artificial intelligence, including machine learning, neural networks, natural language processing, and robotics.

CLO 2. Apply AI techniques to solve real-world problems, including search algorithms, optimization, and decision-making processes.

CLO 3. Understand the ethical, legal, and societal implications of AI, including topics such as bias, fairness, accountability, and the impact of AI on the workforce and privacy.

Module-1: Introduction(8hours)

Introduction: What Is AI? , The State of The Art. Intelligent Agents: Agents and environment, Concept of Rationality, The nature of environment, the structure of agents.

Applications: Automation, Healthcare**,** Finance**.**

Text Book1 Chapter 1: 1.1, Chapter 2: 2.1, 2.2,2.3,2.4

(RBTLevels:L1 andL2)

Module-2:Search Strategies in AI(8 hours)

Self-study: The 8-Puzzle (or n-puzzle), Block World, solving agents

Problem-solving: Problem-solving agents, Example problems, Searchingfor Solutions Uninformed Search Strategies.

Applications: implementation of agent

Text Book1 Chapter 3:3.1, 3.2, 3.3, 3.4

(RBT Levels:L1,L2and L3)

Module-3:Logical Reasoning in AI(8hours)

Problem-solving: Informed Search Strategies, Heuristic functions Logical Agents: Knowledge– based agents, The Wumpus world, Logic, Propositional logic, Reasoning patterns in Propositional Logic

Applications: designing of different agents, logical patterns

Text Book1 Chapter 3: 3.5, 3.6, Chapter 7: 7.1, 7.2, 7.3, 7.4, 7.5

(RBTLevels:L1, L2 and L3)

Module-4:First Order Logic Contracts(8hours)

First Order Logic: Representation Revisited, Syntax and Semantics of First Order logic, Using First Order logic, Knowledge Engineering In First-Order Logic Inference in First Order Logic: Propositional Versus First Order Inference, Unification, Forward Chaining.

Applications: usingFirst-Order Logic

Chapter 8: 8.1, 8.2, 8.3, 8.4, chapter 9: 9.1, 9.2, 9.3

(RBT Levels: L1,L2 and L3)

Module-5:Inference in First Order Logic(8hours)

Inference in First Order Logic: Backward Chaining, Resolution Classical Planning: Definition of Classical Planning, Algorithms for Planning as State-Space Search, Planning Graphs.

Applications: State-Space Search, planning method.

Chapter 9: 9.4, 9.5 Chapter 10: 10.1, 10.2, 10.3

(RBT Levels:L1, L2 and L3)

Course outcome

At the end of the course, the student will be able to:

CO1: Comprehend the structure and elements of intelligent agents, focusing on their interactions with the AI environment.

CO2: Implement problem-solving agents and leverage diverse search techniques to solve specific problems.

CO3: Explain logical reasoning and knowledge representation through propositional and first-order logic systems.

CO4: Exhibit mastery in the application of first-order logic for effective knowledge representation and problem-solving.

CO5: Articulate the principles of classical planning in AI, including its objectives, limitations, and use in problem-solving contexts..

Course Assessment and Evaluation Details(both CIE and SEE)

Continuous Internal Evaluation: 50 marks			
TheoryAssessment Tool	**Marks**	**RBT Levels**	**Reduced marks**
IAT-1	25	L1&L2	25
IAT-2	25	L1,L2&L3	
Assessment-1(activity based)	25	L1,L2&L3	25
Assessment-2(activity based)	25	L1,L2&L3	
SemesterEndExamination(SEE):50marks			
SEE	**Marks**		**Reduced marks**
Course end examination (Answer any one question from each unit – Internal choice)	100		50

Activity Based Learning

Suggested Activities are:

1. Seminar
2. Group Discussion
3. Quiz

Suggested Learning Resources:

COs and POs Mapping (CO-PO mappings are only Indicative)
Suggested Learning Resources:

Text Book:

1. Stuart J. Russell and Peter Norvig, Artificial Intelligence, 3rd Edition, Pearson, 2015

Reference Books:

1. Elaine Rich, Kevin Knight, Artificial Intelligence, 3rd edition, Tata McGraw Hill, 2013
2. George F Lugar, Artificial Intelligence Structure and strategies for complex, Pearson Education, 5th Edition, 2011
3. Nils J. Nilsson, Principles of Artificial Intelligence, Elsevier, 1980
4. Saroj Kaushik, Artificial Intelligence, Cengage learning, 2014

Level 3-HighlyMapped, Level 2-Moderately Mapped, Level 1-Low Mapped, Level 0-Not Mapped

Web links and Video Lectures (e-Resources):

1. https://www.kdnuggets.com/2019/11/10-free-must-read-books-ai.html
2. https://www.udacity.com/course/knowledge-based-ai-cognitive-systems--ud409
3. https://nptel.ac.in/courses/106/105/106105077/

COs	POs												PSO1	PSO2
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	2	2	1	2	2	3	2	3	1	2	3	2
CO2	3	3	2	3	2	2	2	2	3	3	3	2	3	3
CO3	2	3	3	2	2	3	3	3	3	2	2	1	2	3
CO4	3	3	3	3	2	3	3	2	3	3	3	2	3	3
CO5	2	2	2	2	2	3	3	3	3	2	3	3	2	3