SUBJECT: COMPUTER SCIENCE							
			L	**T**	**P**	**C**	**Time for ESE**
DSE	**BCS-E502**	**Artificial Intelligence**	4	-	-	4	3 Hrs.

Pre- requisite: Knowledge of linear algebra, statistics and programming.

Course Objectives:
- To acquaint the student with basic concepts of Artificial Intelligence.
- To aware the student about Theory and practical techniques of artificial intelligence.
- This course would provide emphasis to the principles and applications of Artificial Intelligence.

Course Outcomes:

CO1	Understand what Artificial Intelligence mean and the foundations of it.
CO2	Understand those elements constituting problems and learn to solve it by various uninformed and informed (heuristics based) searching techniques
CO3	Understand the formal method for representing the knowledge and the process of inference to derive representations of the knowledge to deduce what to do.

Course Contents

UNIT	Contents	Lectures Required
1.	**Introduction:** Introduction to Artificial Intelligence, Background and Applications, Turing Test and Rational Agent approaches to AI, Introduction to Intelligent Agents, their structure, behaviour and environment.	5
2.	**Problem Solving and Searching Techniques:** Problem Characteristics, Production Systems, Control Strategies, Breadth First Search, Depth First Search, Hill climbing and its Variations, Heuristics Search Techniques: Best First Search, A* algorithm, Constraint Satisfaction Problem, Means-End Analysis, Introduction to Game Playing, Min-Max and Alpha-Beta pruning algorithms.	15
3.	**Knowledge Representation:** Introduction to First Order Predicate Logic, Resolution Principle, Unification, Semantic Nets, Conceptual Dependencies, Frames, and Scripts, Production Rules, Conceptual Graphs. Programming in Logic (PROLOG);	15
4.	**Dealing with Uncertainty and Inconsistencies:** Truth Maintenance System, Default Reasoning, Probabilistic Reasoning, Bayesian Probabilistic Inference, Possible World Representations.	7
5.	**Understanding Natural Languages:** Parsing Techniques, Context-Free and Transformational Grammars, Recursive and Augmented Transition Nets.	6
	Total Lectures	48

Suggested Text Book(s):

1.	DAN.W. Patterson, Introduction to A.I and Expert Systems – PHI.
2.	Russell & Norvig, Artificial Intelligence-A Modern Approach, Prentice Hall.

BSc (Hons.) (Computer Science) Syllabi under NEP 2020 approved by BOS of Computer Science held on 31.05.2022

[38]

3.	W.F. Clocksin and Mellish, Programming in PROLOG, Narosa Publishing House.

Suggested Reference Book(s):

1.	Ivan Bratko, Prolog Programming for Artificial Intelligence, Addison-Wesley, Pearson Education
2.	Rich & Knight, Artificial Intelligence – Tata McGraw Hill.

Other Useful Resource(s)

1.	https://nptel.ac.in/courses/106105077
2.	https://ocw.mit.edu/courses/6-034-artificial-intelligence-fall-2010/video_galleries/lecture-videos/

Course Outcomes Contributed to Programme Outcomes

PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	AVERAGE
CO1	1	3	3	-	2	3	2	2	**2.0**
CO2	2	3	2	1	1	3	2	1	**1.9**
CO3	1	3	2	2	2	3	3	3	**2.4**
AVG.	**1.3**	**3.0**	**2.3**	**1.0**	**1.7**	**3.0**	**2.3**	**2.0**	**2.1**

Course Outcomes Contributed to Programme Specific Outcomes

PSO→ CO↓	PSO1	PSO2	PSO3	AVERAGE
CO1	1	1	3	**1.7**
CO2	2	1	3	**2.0**
CO3	2	2	2	**2.0**
AVG.	**1.7**	**1.3**	**2.7**	**1.9**

BSc (Hons.) (Computer Science) Syllabi under NEP 2020 approved by BOS of Computer Science held on 31.05.2022

[39]