

**DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY,
LUCKNOW, UTTAR PRADESH**



**EVALUATION SCHEME & SYLLABUS
FOR
B. TECH. 4TH YEAR**

- **Computer Science**
- **Computer Engineering**
- **Computer Science and Engineering**

Based On

National Education Policy (NEP2020) राष्ट्रीय शिक्षा नीति -2020

(Effective from the Session: 2025-26)

B. TECH (COMPUTER SCIENCE & ENGINEERING/ COMPUTER SCIENCE/CE) CURRICULUM STRUCTURE

SEMESTER- VII														
S. No.	Code	Subject	Learning Mode	LTP			Evaluation Scheme						Total	Credit
				L	T	P	CT	TA	Total	PS	TE	PE		
1	BCS701	Artificial Intelligence	Offline	3	-	-	20	10	30	-	70	-	100	3
2	Departmental Elective-IV	Departmental Elective-IV	Offline	3	-	-	20	10	30	-	70	-	100	3
3	BOEM**	Open Elective-II	Offline/ MOOCs	3	0	0	20	10	30	-	70	-	100	3
4	BCS751	Artificial Intelligence LAB	Offline	0	0	2	-	-	-	50	-	50	100	1
5	BCS752	Mini Project or Internship Assessment*		0	0	4	-	-	-	100	-	-	100	2
6	BCS753	Project-I		0	0	10	-	-	-	150	-	-	150	5
7	BCS754	Startup and Entrepreneurial Activity Assessment#		0	0	4	-	-	-	100	-	-	100	2
Total				9	0	20							750	19
		*The Mini Project or internship (5-6 weeks) conducted during summer break after VI semester and will be assessed during VII semester. # The Startup and Entrepreneurial Activity Assessment will be done in 7th semester under which a student will have to undergo a startup/entrepreneurship activity of at least 60 hours till 6th semester												

SEMESTER- VIII														
S. No	Code	Subject	Learning Mode	Periods			Evaluation Scheme						Total	Credit
				L	T	P	CT	TA	Total	PS	TE	PE		
1	BOEM**	Open Elective-III	MOOCs	3	0	0	20	10	30		70		100	3
2	BOEM**	Open Elective-IV	MOOCs	3	0	0	20	10	30		70		100	3
3	BCS851	Project-II		0	0	18				100		350	450	10
Total				6	0	18	24						650	16

The Internal Assessment of MOOCs will be done by the respective institute and the External Assessment (End Semester Examination) will be done by the University.

Departmental Elective- IV

1. BCS070 Internet of Things
2. BCS071 Cloud Computing
3. BCS072 Cryptography and Network Security
4. BCS073 Design & Development of Applications

B.TECH. (CSE/CS/CE)
SEVENTH SEMESTER (DETAILED SYLLABUS)

Artificial Intelligence (BCS701)		
Course Outcome (CO)		Bloom's Knowledge Level (KL)
At the end of course, the student will be able to understand		
CO 1	Understand the fundamentals of Artificial Intelligence, intelligent agents, and various approaches to problem-solving in AI.	K2
CO 2	Apply uninformed and informed search strategies, heuristics, and optimization techniques to solve classical AI problems and games.	K3
CO 3	Implement logical reasoning techniques using propositional and first-order logic, including inference strategies and knowledge representation methods.	K4
CO 4	Analyze uncertainty in knowledge representation using probabilistic reasoning, fuzzy logic, and basic neural network concepts.	K4
CO 5	Evaluate and demonstrate AI applications in areas such as natural language processing (NLP), robotics, multi-agent systems, and Explainable AI (XAI) through real-world problem examples.	K5
DETAILED SYLLABUS		3-0-0
Unit	Topic	Proposed Lecture
I	Introduction to Artificial Intelligence & Intelligent Agents: Definition and scope of AI, History and applications of AI, Characteristics of Intelligent Agents, Types of agents and environments, Agent architecture, Problem Solving Approach to Typical AI problems, Problem-solving agents. Example problems and approaches.	08
II	Problem Solving & Search Strategies: Uninformed Search Strategies: BFS, DFS, Iterative Deepening, Informed Search Strategies: Greedy Best-First Search, A* Search, Heuristics and Optimization, Hill Climbing, Simulated Annealing, Constraint Satisfaction Problems, Game Playing: Min-max, Alpha-Beta Pruning, Stochastic & Partially Observable Games.	08
III	Knowledge Representation & Reasoning: Propositional and First Order Logic, Syntax, Semantics, and Inference, Knowledge-based agents: Wumpus world, Logic Programming using Prolog, Forward and Backward Chaining, Resolution, Ontological Engineering and Reasoning.	08
IV	Uncertainty & Learning Techniques: Introduction to uncertainty and probabilistic reasoning, Bayes' Rule, Bayesian Networks, Fuzzy logic and handling imprecision, Neural Networks (basics only): Perceptron, Backpropagation (intro level), Fundamentals of Machine Learning in AI context, Introduction to supervised and unsupervised learning.	08
V	Applications of AI & Multi-Agent Systems: Natural Language Processing, Machine Translation, Information Retrieval and Extraction, Robotics: Perception, Planning, and Motion, Speech Recognition, Software Agents: Architecture, Communication, Trust, Multi-agent Negotiation and Reputation. Explainable AI (XAI) – Importance of interpretability, techniques for explaining black-box models, trust in AI, case studies in NLP and vision.	08
Recommended Textbooks:		
<ol style="list-style-type: none"> 1. Stuart Russell & Peter Norvig, <i>Artificial Intelligence: A Modern Approach</i>, 4th Edition, Pearson, 2022 2. Ivan Bratko, <i>Prolog: Programming for Artificial Intelligence</i>, 4th Edition, Addison-Wesley 3. Nils J. Nilsson, <i>The Quest for Artificial Intelligence</i>, Cambridge University Press 4. David Poole & Alan Mackworth, <i>Artificial Intelligence: Foundations of Computational Agents</i>, Cambridge Press 		