

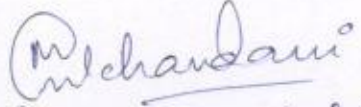
RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FOUR YEAR BACHELOR OF TECHNOLOGY (B.Tech) DEGREE COURSE
SEMESTER: V (C.B.C.S.)
BRANCH: COMPUTER SCIENCE AND ENGINEERING

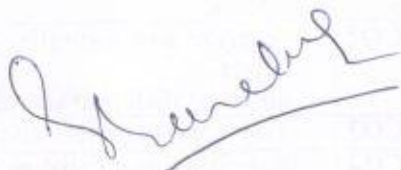
Fifth Semester:-

S. N.	Subject	Teaching Scheme			Evaluation Scheme			Credits	Category
		L	T	P	CA	UE	Total		
1	Artificial Intelligence	3	1	-	30	70	100	4	PCC-CS
2	Artificial Intelligence-Lab	-	-	2	25	25	50	1	PCC-CS
3	Design & Analysis of Algorithms	3	1	-	30	70	100	4	PCC-CS
4	Design & Analysis of Algorithms -Lab	-	-	2	25	25	50	1	PCC-CS
	Software Engineering & Project Management	3	-	-	30	70	100	3	PCC-CS
5	Elective-I	3	-	-	30	70	100	3	PEC-CS
6	Effective Technical Communication	2	-	-	15	35	50	2	HSMC
7	Professional Skills Lab I			2	25	25	50	1	ESC
8	Yoga and Meditation (Audit Course)	2	-	-	50	-	-	Audit	MC
	Total	16	02	06			600	19	

Elective-I: 1. TCP/IP 2. Design Patterns 3. Data Warehousing and Mining


 [Mrs. B. P. Chavaskar]


 [Mrs. Mona Mulchandani]


 Dr. S. V. Sonelkar
 Chairman

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Subject: Artificial Intelligence

Subject Code: BTECH_CSE-501T

Load [Th+Tu]	Credits [Th+Tu]	College Assessme nt Marks	University Evaluation	Total Mark s
[36 + 12]=48 Hrs	3+1=4	30	70	100

Aim: To understand the basic principles and concepts of Artificial Intelligence.

Prerequisite(s): Student should have basic knowledge of computers and mathematics.

Course Objectives:

1	To create appreciation and understanding the achievements of AI and the theory underlying those achievements
2	To create an understanding of the basic issues of knowledge representation

Course Outcomes:

At the end of this course students are able to:

CO1	Demonstrate knowledge of the building blocks of AI as presented in terms of intelligent agents.
CO2	Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them.
CO3	To create an understanding of the basic issues of knowledge representation
CO4	Formulate and solve problems with uncertain information using Bayesian approaches.
CO5	Attain the capability to represent various real life problem domains using logic based techniques and

SYLLABUS:

UNIT-I

Introduction: What is AI? History & Applications, Artificial intelligence as representation & Search, Production system, Basics of problem solving: problem representation paradigms, defining problem as a state space representation, Characteristics.

UNIT-II

Search Techniques: Uninformed Search techniques, Informed Heuristic Based Search, Generate and test, Hill-climbing, Best-First Search, Problem Reduction, and Constraint Satisfaction.

UNIT-III

Knowledge representation: Knowledge representation Issues: First order logic, Predicate Logic, Structured Knowledge Representation: Backward Chaining, Backward Chaining, Resolution, Semantic Nets, Frames, and Scripts, Ontology.

UNIT-IV

Uncertainty: Handling uncertain knowledge, rational decisions, basics of probability, axioms of probability, Baye's Rule and conditional independence, Bayesian networks, Exact and Approximate inference in Bayesian Networks, Fuzzy Logic.

Intelligent Agents: Introduction to Intelligent Agents, Rational Agent, their structure, reflex, model-based, goal-based, and utility-based agents, behavior and environment in which a particular agent operates.

UNIT-V

Learning: What is learning?, Knowledge and learning, Learning in Problem Solving, Learning from example, learning probabilistic models

Expert Systems: Fundamental blocks, Knowledge Engineering, Knowledge Acquisition, Knowledge Based Systems, Basic understanding of Natural language

Text Books:

1. E.Rich and K. Knight, Artificial Intelligence, Tata McGraw Hill, 2008.
2. S. Russell and P. Norvig, Artificial Intelligence: A Modern Approach, 3rd edition, Pearson Education, 2015.
3. Artificial intelligence and soft computing for beginners by Anandita Das Bhattachargee, Shroff Publishers
4. Artificial Intelligence – A Practical Approach : Patterson , Tata McGraw Hill, 3rd Edition

Reference Books:

1. Introduction to Artificial Intelligence – Charniak (Pearson Education)



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SEMESTER: V (C.B.C.S.)
BRANCH: COMPUTER SCIENCE AND ENGINEERING

Subject: Artificial Intelligence LAB
501P

Subject Code: BTECH_CSE-

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
2 Hrs/Week	1	25	25	50

Aim: This lab is aimed to provide students a complete insight of the implementation of different Artificial Intelligence algorithms.

Course Objectives:

1	To create appreciation and understanding the achievements of AI and the theory underlying those achievements
2	To create an understanding of the basic issues of knowledge representation

Course Outcomes:

Expected experiments to be performed (Not limited to):

Using the Python Libraries for Artificial Intelligence

1. AIMA-Python
2. PyDatalog
3. Simple
4. Easy

Write programs based on the following:

1. Graph search algorithms
2. Adversarial search
3. Knowledge representation
4. Logical inference
5. Probability theory
6. Bayesian networks
7. Markov models
8. Constraint satisfaction
9. Machine learning
10. Reinforcement learning
11. Neural networks
12. Natural language processing