SANATAN DHARMA COLLEGE, AMBALA CANTT

College with Potential for Excellence,
UGC,New Delhi NAAC Accredited Grade
"A+" with CGPA 3.51 in 3rd cycle
ISO 9001:2015 & ISO 14001:2015 Certified

Department of Computer Science

Lesson Plan (Session 2022-2023)

Class: BCA Sem: V Course Code: BCA-353 Nomenclature: Artificial Intelligence

Duration: 17 Weeks Dates: 11 Oct 2021- 2 Feb , 2022

SYLLABUS

BCA-353
Artificial Intelligence

External Marks: 80 Maximum Marks: 100
Internal Marks: 20 Minimum pass Marks: 35
Time: 3 Hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory,consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Artificial Intelligence : Intelligence, AI Concepts, Various definitions of AI, Knowledge, Knowledge Pyramid, People and Computers: What computers can do better that people, what people can do better than computers; Characteristics of AI Problems, Problem Representation in AI, Components of AI, AI Evolution, Application Areas of AI, History of AI, The Turing Test, The Revised Turing Test

UNIT – II

Expert System: Components of Expert System: Knowledge Base, Inference Engine, User Interface, Features of Expert System, Expert System Life Cycle, Categories of Expert System, Rule Based vs. Model Based Expert Systems, Advantages/Limitations of Expert System, Developing an Expert System: Identification, Conceptualization, Formalization, Implementation, Testing, Using an Expert System, Application Areas of Expert System

UNIT-III

AI and Search Process: Brute Force Search – Depth First/Breadth First Search, Heuristic Search: Hill Climbing, Constraint Satisfaction, Mean End Analysis, Best First Search, A* Algorithm, AO* Algorithm, Beam Search.

UNIT – IV

Natural Language Processing: Introduction, Need, Goal, Fundamental Problems in Natural Language Understanding, How People overcome Natural Language Problems, Speech Recognition: Introduction, Advantages and Approaches, Introduction to Robotics: Parts of a Robot, Controlling a Robot, Intelligent Robots, Mobile Robots

TEXT BOOKS:

Henry C.Mishkoff, "Understanding Artifical Intelligence"
V S Janakiraman, "Foundation of Artificial Intelligence and Expert Systems"

REFERENCE BOOKS:

Dan W. Patterson, "Introduction to Artificial Intelligence and Expert Systems"

Course Code	BCA-353
Course Title	**ARTIFICIAL INTELLIGENCE**
CO No.	**Course Outcomes**
1.	Understand different types of AI agents
2.	Know various AI search algorithms
3.	Understand the fundamentals of knowledge representation (logic-based, frame-based, semantic nets), inference and theorem proving
4.	Know how to build simple knowledge-based system.
5.	Demonstrate working knowledge of reasoning in the presence of incomplete and/or uncertain information
6.	Ability to apply knowledge representation, reasoning, and machine learning techniques to real-world problems.
7.	Ability to carry out independent (or in a small group) research and communicate it effectively in a seminar setting.
8.	Know about the different searching process techniques
9.	Know about the NLP
10.	Know about the Robotics

S.No	Instructional Technique	Assessment Methods (AM)
1	Chalk & Talk	Assignments
2	ICT tools	Quiz
3	Group discussions	Group Discussions
4	Industrial visit	Oral Tests
5	Case studies	Sessional
6	Small Projects	Presentations
7	Workshop	Seminar
8	Spoken Tutorials	University Exams
9	Flipped Class	
10.	E-Resources	

Detailed Lesson

Week	Date	Topic to be Covered	Instructional Technique	Assessment Method
1	11.10.21	Introduction to Artificial Intelligence : Intelligence, AI Concepts	**2-(PPT/Projector)**	----
	12.10.21	Discussion over Knowledge Various types of Knowledge Knowledge Pyramid	**2(PPT/Projector)**	**1**
	13.10.21	Knowledge Pyramid	**1**	**1**
2	18.10.21	Characteristics of AI Problems	**2-(PPT/Projector)**	----
	19.10.21	People and Computers: What computers can do better that people, what people can do better than computers Characteristics of AI Problems	**2(PPT/Projector)**	**1**
	20.10.21	Advantages & Disadvantages of AI	**1**	**1**
3	25.10.21	Problem Representation in AI	**1**	**1,2,3,4**
	26.10.21	Various Methods of Problem Representation in AI	**2-(PPT/Projector)**	**1,2,3,4**
	27.10.21	Discussion over Components of AI	**2-(PPT/Projector)**	**1,2,3,4**
4	1.11.21	AI Evolution, History of AI	**2-(PPT/Projector)**	**1,2,3,4**
	2.11.21		HOLIDAY	
	3.11.21	Application Areas of AI	2-(PPT/Projector)	1,2,3,4
5	8.11.21	The Turing Test, The Revised Turing Test		
	9.11.21	Revision of UNIT -1	2-(PPT/Projector)	1,2,3,4
	10.11.21	Introduction to Expert System: Components of Expert System	2-(PPT/Projector)	1,2,3,4
6	15.11.21	Components of Expert System: Knowledge Base, Inference Engine, User Interface	9	1,2,3,4
	16.11.21	Features of Expert System	2-(PPT/Projector)	1,2,3,4
	17.11.21	Expert System Life Cycle	2-(PPT/Projector)	1,2,3,4
7	22.11.21	HOLIDAY		
	23.11.21	Categories of Expert System, Rule Based vs. Model Based Expert Systems	---	6
	24.11.21	Advantages/Limitations of Expert System	9	1,2,3,4,6
8	29.11.21	Introduction to Developing an Expert System	8,10,2	1,2,3,4,
	30.11.21	Developing an Expert System: Identification, Conceptualization, Implementation, Testing	8,10,2	1,2,3,4,
	1.12.21	Diwali Vacations		
	6.12.21	Using an Expert System, Application Areas of Expert System	6	1,2,3,4

	7.12.21	Revision of UNIT -2	6	1,2,3,4
	8.12.21	Introduction to AI and Search Process	2-(PPT/Projector)	1,2,3,4
10	13.12.21	Brute Force Search – Depth First/Breadth First Search	2-(PPT/Projector)	1,2,3,4
	14.12.21	Introduction to Heuristic Search: Hill Climbing		
	15.12.21	Holiday		
11	20.12.21	Discussion over Constraint Satisfaction	2-(PPT/Projector)	1,2,3,4
	21.12.21	Discussion over Mean End Analysis, Best First Search		
	22.12.21	Discussion over A* Algorithm	2-(PPT/Projector)	1,2,3,4
12	27.12.21	AO* Algorithm, Beam Search.	6	1,2,3,4
	28.12.21	Revision of UNIT -3	6	1,2,3,4
	29.12.21	**Sessional**	--	5
13	3.1.22	SUNDAY		
	4.1.22	Introduction to Natural Language Processing: Introduction, its Need &Goal	2-(PPT/Projector)	1,2,3,4
	5.1.22	Discussion over Problems in Natural Language Understanding	2-(PPT/Projector)	1,2,3,4
14	10.1.22	How People overcome Natural Language Problems	6	1,2,3,4
	11.1.22	Speech Recognition: Introduction, Advantages and Limitations	2-(PPT/Projector)	1,2,3,4
	12.1.22	Approaches to Speech Recognition	6	1,2,3,4
15	17.1.22	Revision	2-(PPT/Projector)	1,2,3,4
	18.1.22	Introduction to Robotics: Parts of a Robot	9,10	1,2,3,4
	19.1.22	Controlling a Robot	9,10	1,2,3,4
16	24.1.22	Intelligent Robots, Mobile Robots	2-(PPT/Projector)	1,2,3,4
	25.1.22	Revision of Important topics	2-(PPT/Projector)	1,2,3,4
	26.1.22	Doubt Session	6	1,2,3,4
17	31.1.22	Discussion over Previous Year papers	6	1,2,3,4
	1.2.22	Revision	2-(PPT/Projector)	1,2,3,4
	2.2.22	Revision	6	1,2,3,4