Kadi Sarva Vishwavidyalaya

Faculty of Engineering & Technology

Fourth Year Bachelor of EC Engineering

(VIIIthsem Academic Year 2020)

Subject Code: EC803A-N	Subject Title: Artificial Intelligence

Course Objective:

- With the usage of Internet and World Wide Web increasing day by day, the field of AI and its techniques are being used in many areas which directly affect human life.
- Various techniques for encoding knowledge in computer systems
- Student should know some programming language for Artificial Intelligence.

Teaching Scheme (Credits and Hours)

Teaching scheme				Total Credit	Evaluation Scheme					
L	T	P	Total		Theory		IE	CIA	Pract.	Total
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	Marks
04	00	02	06	05	03	70	30	20	30	150

Outline of the Course:

Sr. No.	TitleoftheUnit	Hours
1	Introduction	05
2	Problem Spaces and Search	15
3	Knowledge Representation Issues	05
4	Game Playing: Overview, And Example Domain	10
5	Understanding	05
6	Natural Language Processing	05
7	Introduction to Prolog	15
	Total	**60**

Total hours (Theory): 60

Total hours (Tutorial):

Total hours:

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Detailed Syllabus:

Unit No.	Topic	Lecture Hours	Weightage (%)
1.	**Introduction :** What is Artificial Intelligence, Artificial Intelligence Problems, AI Techniques, The Level Of The Model, Criteria For Success.	**05**	**15**
2.	**Problem Spaces and Search** State space search, Uninformed - DFS, BFS, Iterative Deepening and informed search techniques: heuristic Functions, Generate and Test Hill Climbing, Problem Reduction ,Constraint Satisfaction ,Mean-Ends Analysis ,Simulated Annealing, A*, variations of A*.	**15**	**20**
3.	**Knowledge Representation Issues**: Representations And Mappings, Approaches To Knowledge Representation.	**05**	**10**
4.	**Game Playing: Overview, And Example Domain :** Overview, MiniMax, Alpha-Beta Cut-off, Refinements, Iterative deepening, The Blocks World, Components Of A Planning System, Goal Stack Planning, Nonlinear Planning Using Constraint Posting, Hierarchical Planning, Reactive Systems, Other Planning Techniques	**10**	**15**
5.	**Understanding:** What is understanding?What makes it hard?, As constraint satisfaction	**05**	**10**
6.	**Natural Language Processing :** Introduction, Syntactic Processing, Semantic Analysis, Semantic Analysis, Discourse And Pragmatic Processing, Spell Checking	**05**	**10**
7.	**Introduction to Prolog**: Introduction To Prolog: Syntax and Numeric Function, Basic List Manipulation Functions In Prolog, Functions, Predicates and Conditional, Input, Output and Local Variables, Iteration and Recursion, Property Lists and Arrays, Miscellaneous Topics, LISP and Other AI Programming Languages.	**15**	**20**
	Total	**60**	**100**

Instructional Method and Pedagogy (Continuous Internal Assessment (CIA) Scheme)

- At the start of course, the course delivery pattern , prerequisite of the subject will be discussed
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc. & equal weightage should be given to all topics while teaching and conduction of all examinations.

- Attendance is compulsory in lectures and laboratory, which may carries five marks in overall evaluation.
- One/Two internal exams may be conducted and total/average/best of the same may be converted to equivalent of 30 marks as a part of internal theory evaluation.
- Assignment based on course content will be given to the student for each unit/topic and will be evaluated at regular interval. It may carry an importance of ten marks in the overall internal evaluation.
- Surprise tests/Quizzes/Seminar/Tutorial may be conducted and having share of five marks in the overall internal evaluation.

Learning Outcomes:

On successful completion of the course

- Understand various search methods
- Use various knowledge representation methods
- Understand various Game Playing techniques
- Use Prolog Programming language using predicate logic

TEXT BOOKS:

1 "Artificial Intelligence" -By Elaine Rich And Kevin Knight (2nd Edition) Tata Mcgraw-Hill
2. Artificial Intelligence: A Modern Approach, Stuart Russel, Peter Norvig, PHI
3 Introduction to Prolog Programming By Carl Townsend.
4. "PROLOG Programming For Artificial Intelligence" -By Ivan Bratko(Addison-Wesley)
5. "Programming with PROLOG" –By Klocksin and Mellish.

E-Resources: •

1. https://nptel.ac.in/courses/106106126/
2. http://www.journals.elsevier.com/artificial-intelligence/
3. https://www.technologyreview.com/s/534871/our-fear-of-artificial-intelligence/
4. http://www.sanfoundry.com/artificial-intelligence-mcqs-inductive-logic-unification-lifting-1/

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LIST OF EXPERIMENTS

No.	Experiment Title
1.	Write a program to implement Tic-Tac-Toe game problem
2.	Write a program to implement Single Player Game (Using Heuristic Function)
3.	Write a program to Implement A* Algorithm
4.	Write a program to implement recursion in PROLOG.
5.	Write a program to implement Lists in PROLOG.
6.	Write a program to implement BFS (for 8 puzzle problem or Water Jug problem or any AI search problem)
7.	Write a program to implement DFS (for 8 puzzle problem or Water Jug problem or any AI search problem)
8.	Write the Conceptual Dependency for following statements. (a) John gives Mary a book (b) John gave Mary the book yesterday
9.	Write a program to solve travelling salesman problem using Prolog.
10.	Write a program to display the element of give list.
11.	Write a program for the family tree.
12.	Study of dynamic database in PROLOG.