Artificial Intelligence

Course Code: CS304

Cours Type: Core

L-T-P-C: 3-1-0-4

CSE-Semester 5 Sec “B”

Course instructor: Dr Girish G N

Course Outline:

Credits (L-T-P-S-C): 3-1-0-0-4

Syllabus:

Module 1: Introduction- Definition and history of AI, Introduction to Intelligent agents- PEAS Description, Agent types.
Module 2: Problem solving by Searching - Uninformed search algorithms: Breadth First Search, Depth First Search, Depth Limiting Search, Iterative Deepening Search, Informed (Heuristic) search algorithms: Greedy Best First Search, A* Search and its admissibility.
Module 3: Beyond Classical Search- Local Search algorithms: Hill Climbing, Simulated Annealing, Game theory and Adversarial Search: Min-Max Algorithm, Alpha-Beta Pruning, Constraint Satisfaction Problems: CSP, Solving CSP, Arc Consistency and AC-3.
Module 4: Logical Agents & Propositional Logic- Introduction to logical agents, Propositional logic, Propositional inference mechanisms: Proof by deduction., Forward chaining and Backward Chaining, Conjunctive normal form and Resolution
Module 5: First Order Logic & Inference- First Order Logic, Conjunctive normal form, Resolution - theorem proving, Forward chaining and Backward Chaining
Module 6: Learning- Bayesian Learning, Introduction to Supervised Learning, Unsupervised Learning and Reinforcement Learning.

Text Book and Evaluation Plan:

Text Book:

a) Norvig, P., and Russell, S. J. (2016). Artificial Intelligence: A Modern Approach. United Kingdom: Pearson., ISBN-13: 978-0136042594

Reference Books:

a) Brachman, R. J., Levesque, H. J., and Reiter, R. (Eds.), (1992), Knowledge Representation, MIT Press, ISBN-13: 978-1558609327

b) Forbus, K. D., and De Kleer, J. (1993). Building problem solvers (Vol. 1). MIT press, ISBN-10: 0262061570

Course Assessment Components

a) Mid Exam (25%)

b) End Exam (25%)

c) Assignment (20%) – Before Mid Exam, Submission: after Mid Sem

d) Class participation/Seminar: (25%)

e) Attendance-5% (90% and above)

f) Course Attendance Policy- as per institute norms