# 23IT21T1– ARTIFICIAL INTELLIGENCE LAB

(AI&DS)

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| Course Category: | Professional Core | Credits: | 1.5 |
| Course Type: | Practical | Lecture-Tutorial-Practical: | 0-0-3 |
| Prerequisite: | Knowledge in Computer Programming.  Background in linear algebra, data structures and algorithms, and probability | Sessional Evaluation:  Univ. Exam Evaluation:  Total Marks: | 30  70  100 |
| Objectives: | **Students undergoing this course are expected:** | | |
| * The student should be made to study the concepts of Artificial Intelligence. * The student should be made to learn the methods of solving problems using Artificial Intelligence. * The student should be made to introduce the concepts of Expert Systems and machine learning. | | |

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| Course Outcomes | Upon successful completion of the course, the students will be able to: | |
| CO1 | Understand the Mathematical and statistical prospective of machine learning  algorithms through python programming (L2) |
| CO2 | Appreciate the importance of visualization in the data analytics solution. (L5) |
| CO3 | Derive insights using Machine learning algorithms (L5) |
| CO4 | Implement and demonstrate AI and ML algorithms. (L5) |
| CO5 | Evaluate different algorithms. (L3) |
| Course Content | List of Experiments  1. Write a Program to Implement Breadth First Search using Python.  2. Write a program to implement Best First Searching Algorithm  3. Write a Program to Implement Depth First Search using Python.  4. Write a program to implement the Heuristic Search  5. Write a python program to implement A\* and AO\* algorithm. (Ex: find the shortest  Path)  6. Write a Program to Implement Water-Jug problem using Python. 7. Write a Program to Implement Alpha-Beta Pruning using Python. 8. Write a Program to implement 8-Queens Problem using Python. 9. Write a program to schedule a meeting among a 5 busy people using Default  Reasoning the output should give the time, place and day of the meeting. 10. Write a program to implement the Unification algorithm 11. Develop a knowledge base system consisting of facts and rules about some  Specialized Knowledge domain 12. Write a program to implement 8 puzzle programs using different heuristics. Using it  Play the game Tic-Tac-Toe at the end the game the program should display the no.  Of nodes generated, cutoff values at each stage in the form of a table. | |
| Text Books &  References  Books | TEXTBOOKS:   1. PrateekJoshi,Artificial Intelligence with Python,Packt Publishing, 2017. 2. Xiao, Perry. Artificial intelligence programming with Python: from zero to hero. John Wiley & Sons, 2022.   REFERENCE BOOKS:   1. Stuart J. Russell and Peter Norvig, Artificial Intelligence A Modern Approach, fourth Edition, Pearson, 2020 2. Martin C. Brown (Author), “Python: The Complete Reference” McGraw Hill Education, Fourth edition, 2018 3. R. NageswaraRao , “Core Python Programming” Dreamtech Press India Pvt Ltd 2018 | |
| E-Resources | 1. <https://onlinecourses.nptel.ac.in/noc19_cs40/preview> 2. https://onlinecourses.nptel.ac.in/noc19\_cs41/preview | |