Semester-V/ Extra Credit Value Added Course I	Artificial Intelligence (Theory and Practical)	Course Code:VAX:1B
Instruction Hours:	Credits: 2	Exam Hours: -
Theory – 40 Marks	Practical : 60 Marks	Total Marks: 100

Course Objectives:

- Study the concepts of Artificial Intelligence.
- Learn the methods of solving problems using Artificial Intelligence.
- Learn the knowledge representation techniques, reasoning techniques and planning
- **Demonstrate knowledge and understanding of the engineering and managementprinciples**
- Introduce the concepts of Expert Systems and machine learning.

UNIT I: **Marks: 40**

Introduction to Artificial Intelligence:

- Introduction to AI
- Intelligent Agents
- Search Methods and Knowledge Representation
- Use Cases of Artificial Intelligence
- Role of Machine Learning Engineer
- Machine Learning Tools &Packages

UNIT II
Python Data Structures

- Python Programming Fundamentals
- Conditions and Branching
- Loops
- Functions
- Python Packages
- Working with NUMPY
- Working with Pandas
- Introduction to Data Visualization
- Introduction to Matplotlib and Seaborn
- Basic Plotting with Matplotlib and Seaborn

UNIT III

Data Wrangling Techniques

- Introduction to Data pre-processing
- Importing the Dataset
- Handling Missing data
- Working with Categorical Data
- Splitting the data into Train and Test set
- Feature Scaling

Marks:60

List of Practicals:

1. Write a program to implement DFS
2. Write a program to implement BFS
3. Write a Program to find the solution for travelling salesman Problem
4. Write a program to implement Simulated Annealing Algorithm
5. Write a program to Illustrate Python Functions
6. Write a program to implement 8 puzzle problem
7. Write a program to implement Towers of Hanoi problem
8. Write a program to implement Water Jug Problem
9. Write a program to implement Knap sack Problem
10. Write a Program to Implement Alpha-Beta Pruning using Python.

Course Outcomes:

Upon completing the course, students will be able to:

- Familiar with Artificial Intelligence, its foundation and principles.
- Identify appropriate AI methods to solve a given problem.
- Examine the useful search techniques, knowledge representation techniques,Inference methods; learn their advantages, disadvantages and comparison.
- Understand important concepts like Expert Systems, AI applications.
- Learn Prolog Programming to program intelligent systems.