



## **Artificial Intelligence With Python**

**Duration 6- weeks**

Artificial intelligence (AI) is wide-ranging branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence. AI is an interdisciplinary science with multiple approaches, but advancements in machine learning and deep learning are creating a paradigm shift in virtually every sector of the tech industry. Machine learning feeds a computer data and uses statistical techniques to help it "learn" how to get progressively better at a task, without having been specifically programmed for that task, eliminating the need for millions of lines of written code

Software: Anaconda Navigator Latest (IDE) version

- Web-based interactive computing note book environment – **Jupyter Notebook** 6.4.5 or higher
- Scientific Python Development Environment **Spyder** 5.0.5 or higher

### **1<sup>st</sup> Week**

#### **Python Environment Concepts**

1. Jupyter Note Book – Spyder Overview
2. JYNB Working Environment
3. Structure of jpynb
4. Saving/Loading Notebook
5. Edit Cells /View Cells /Insert Cells
6. Keyboard Shortcuts /Magic Commands
7. Execute Cells /Kernel Cells /Widgets / Markdown



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### **Core Python Programming**

8. Elementary Programming with simple examples
9. Mathematical Functions, Strings, and Objects
10. Loops with programming
11. Functions & Class functions generation
12. Import functions & generate user define import functions

### **2<sup>nd</sup> Week**

### **Advanced Python Programming**

13. Data structures [List, Tuple, Set, Frozen set, and Dictionary]
14. Build in Functions & Lambda Functions
15. Packages, Modules
16. Math, OS, Random, Statistics, Sys, other Modules
17. Create UDM (User Defined Modules)

### **Data Analysis with**

18. Numpy
19. Scipy
20. Pandas
21. Seaborn
22. Bokeh

### **3<sup>rd</sup> Week**

### **Overview of Artificial Intelligence**

23. Introduction to types of Artificial Intelligence
24. Introductions to Reactive Machines



25. Introductions to Limited Memory
26. Introductions to Theory of Mind
27. Search Techniques.
- 28 . Knowledge Representations
29. Neural networks and Deep learning.
30. Natural language processing
31. Fuzzy logic and its applications
32. Introductions to AI with Python – Speech Recognition

### **Types of Data Analysis**

33. Descriptive Analyses
34. Exploratory Data Analysis
35. Predictive Analysis
36. Inferential Analysis

### **4th Week**

#### **Data Visualization with Matplotlib**

37. Working with Pyplot
38. Lines, Bar, Pie, Scatter, Histogram, Box, Violin Plots

#### **Algorithms Implementation**

39. Introduction to Algorithm and how it is implement
- 40 . Algorithm\_1 Linear regressions.
41. Algorithm\_2 logistic regressions.
42. Algorithm\_3 Decision tree.
- 43 . Algorithm\_4 Support Vector Machine (SVM)
- 44 . Algorithm\_5 Naive Bayes
45. Algorithm\_6 KNN algorithm.

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46. Algorithm\_7 K-means

47. Algorithm\_8 Random forest algorithms.

### **Industry Based Project and Artificial Intelligence libraries in python**

48. My first project in AI

49 . Case study Industry Project and Implementation with analysis

