

Artificial Intelligence Assistant

S No.	NOS	Topics	Duration (Hours)		Learning Outcomes
			Theory	Lab	
1	Programming with Python	<ul style="list-style-type: none"> Installing and configuring programming environment for python Writing basic programs and understanding datatypes, operators, looping constructs, functions Exploring various data structures Learn to work on modules and packages 	20	40	<ul style="list-style-type: none"> Students will be able to learn to install and configure the python IDE and learn about working on collaborative cloud interface required for programming Students will understand the basics of Python Language and will be able to recognize Python syntax Students will understand and write programs in python language, compile, debug and handle exceptions Student will have an understanding of working with top down or bottom up approach by making functions. Students will come to know about benefits of modular programming by defining and calling various functions. Students will be able to explain various ways of passing the parameters to functions and difference between all the ways. Students will learn the working of different data structures which allow to organize and store data. Students will learn to apply algorithms to process data in various data structures in a meaningful way. Student will learn algorithms which will help in becoming a better programmer by writing code that is more efficient and more reliable.
2	Conceptualising Data Science with python	<ul style="list-style-type: none"> Concept of Data Science and tools used Pre- Processing Concepts in Data Science Introduction to Numpy and Working on N-d arrays Learning Analysis on Numpy Exploring Image handling using Numpy 	24	36	<ul style="list-style-type: none"> Students will learn about the concept of Data Science that relies on mathematical and statistical formulas to extract data and make sense of it. Students will learn about unstructured and raw data and how to convert that into meaningful form. Students will learn about how data can be converted into assets to help improve revenue by improving customer experience, and more. Students will learn about various tools used for processing volumes of data. Students will learn about techniques to pre-process the data to make it ready for analysis. Students will learn about the library which deals with n-dimensional arrays. Students will work on the library to perform a wide variety of mathematical operations on arrays. Students will explore generating efficient calculations with arrays and matrices using mathematical functions available in library. Students will learn to optimize the code with Numpy library.

					<ul style="list-style-type: none"> • Students will put to use Numpy library features along with Data Science, and Data Analysis. • Students will learn the storage of images in the Nd-arrays of Numpy and manipulating the images.
3	Data analysis and Visualization	<ul style="list-style-type: none"> • Introduction to Pandas • Exploring Data Frames and Series • Learning EDA and Data Analysis • Performing Analysis on datasets • Introduction to Visualisation and Learning Tools for making Graphs and plots • Exploring analysis through visualisation 	34	56	<ul style="list-style-type: none"> • Student will be able to recognize Python Library Pandas which is the most widely used for Data Analysis/Data Science in machine learning tasks. • Student will be able to distinguish the differences between Numpy and Pandas. • Students will be able to analyse Big Data and make conclusions based on statistical theories. • Students will learn to represent data in way that will facilitate better results for data science projects. • Students will learn to use Pandas for cleaning messy datasets, and make them readable and relevant through huge set of commands and features. • Students will learn to filter, segment, merge and segregate the datasets. • Students will be able to demonstrate the role of Pre-processing, Analysis and Data science through guided case study and exercise • Student will learn how business problems can be understood by using Visualisation techniques. • Students will learn the tools to make numerous and diverse plot types. • Students will learn Matplotlib, the widely-used Python package for creating advanced data visualizations • Students will make graphs using Matplotlib and Seaborn which are the backbone of data visualization through Python. • Students will learn how Data visualization helps to understand data better by depicting into a form easier to understand and highlighting the trends and outliers.
4	Fundamentals of Machine Learning	<ul style="list-style-type: none"> • Introduction to Machine Learning • Learning various ML categories • Learning to build models on datasets • Exploring the outputs of models 	12	18	<ul style="list-style-type: none"> • Students will learn the concept of Machine Learning and its various categories and its application. • Students will be able to understand the difference between Supervised, unsupervised, and reinforcement learning • Students will be able to understand different paths of Machine Learning, i.e., Computer Vision, Predictive Analysis, Natural Language Processing and other applications. • Student will be able to implement ML models and work on the optimization of the accuracy of the models. • Students will be able to understand the complete cycle of AI Project. • Student will be applying models using various algorithms in Scikit-learn library. • Students will be able to implement various examples to understand the

				working of ML models.
Sub Total = 240 hours		90	150	
4	Employability Skills	30		Students will be able to get the additional skills apart from the technical skills, to be job ready
5	OJT/Project	30		Students will be able to learn the working in a job.
Total Duration		300		