# Jupipy Software's LLP

**JUPIPY LLP**

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<u>Letter of Business Proposal</u>

13/03/2023

To,

The Director,

Ashoka Business School,

Nashik – 422009

Dear Sir,

I am writing to propose to conduct a series of Various **Business Analytics courses with Python & Data Science along with ML & AI**. As you are aware business analytics has become integral part of the modern business world.

We, **Jupipy Software's LLP**, specialize in providing educational training in Business Analytics with Data science. We have designed a comprehensive Business Analytics courses that covers various aspects of subject.
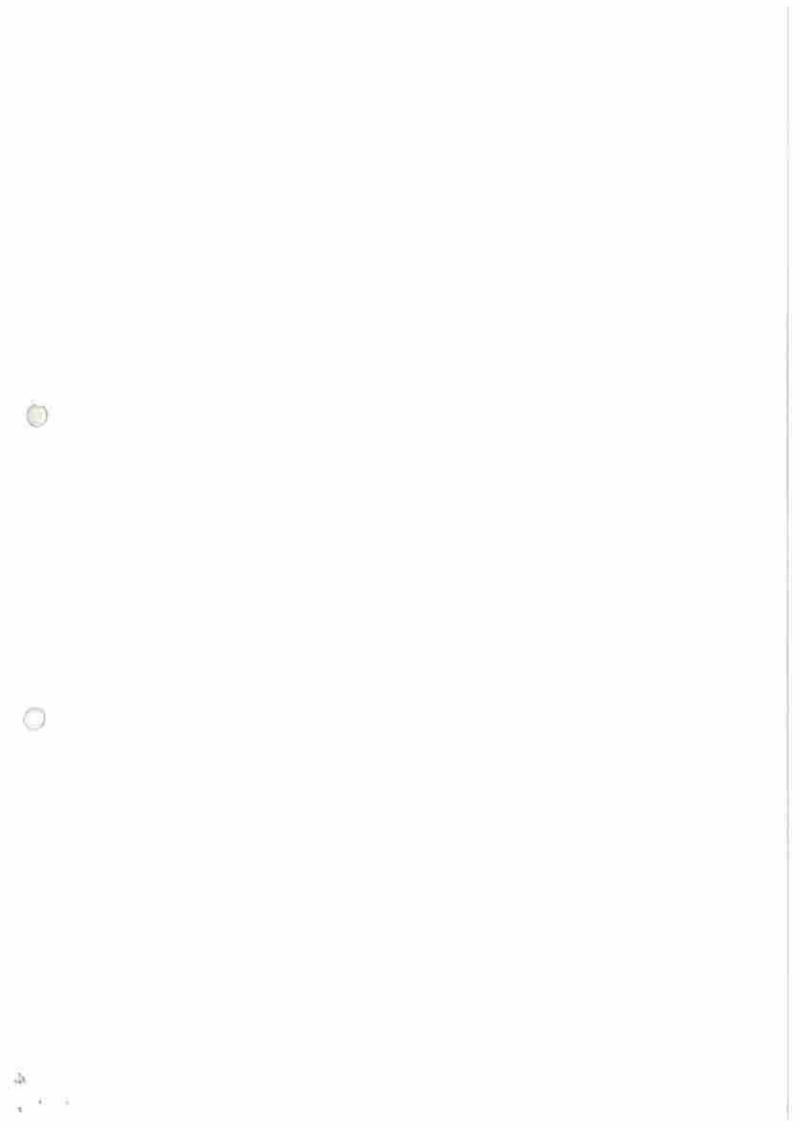
Our proposal is to conduct a series of sessions over the period of ten weeks. The session will be conducted by our experienced trainer who will cover the course content using **real world examples, assignments and case studies with practical knowledge of subject**.

We look forward to discussing this proposal with you further. Thank you for your time and consideration.

Sincerely,

Ganesh Pathak

Jupipy Software's LLP

# Course Details

## 1. Python with Tableau / Microsoft Power BI

| | | |
|---|---|---|
| Duration | : | 35 Hours |
| Fees | : | 500 Rs / per student |
| Internship | : | Free of cost |
| Project | : | Free of cost |
| Mode | : | Online + Offline |

### First interaction with python basics
- Indents and comments
- take input from user and challenge
- input challenge solution
- getting started with variables in python
- numbers and strings basics in python
- Lists and tuples basics in python
- Dictionary in python

### Operations in Python
- Arithmetic and comparison operators in python
- Logical operations in python
- Membership and identity operations in python

### Conditionals and loops
- Introduction to conditionals
- Design a rating system in python
- While - Getting started with loops in python
- First step to read documentation
- For loop in python
- Break keyword in python loops
- continue and pass keywords in python

### Functions Files and Exceptions
- getting started with functions in python
- Multiple arguments in python
- lambda in python
- design custom modules in python

➢ Find the day assignment in python
➢ Main method and file handling in python
➢ Exception handling

## Python challenges for fun
➢ Prime number and challenges
➢ range of prime numbers
➢ finding factorials
➢ Get matrix input and print it

## Object Oriented programming in python
➢ Introduction to class
➢ objects and constructor in python
➢ Getters and setters in python
➢ Inheritance from Samsung to iphone
➢ Method overriding in python

## Pandas Tutorial
➢ Pandas Intro
➢ Pandas Getting Started
➢ Pandas Series
➢ Pandas DataFrames
➢ Pandas Read CSV
➢ Pandas Read JSON
➢ Pandas Analyzing Data

## Cleaning Data
➢ Cleaning Data
➢ Cleaning Empty Cells
➢ Cleaning Wrong Format
➢ Cleaning Wrong Data
➢ Removing Duplicate

## NumPy Tutorial
➢ NumPy - Introduction
➢ NumPy - Environment
➢ NumPy - Ndarray Object
➢ NumPy - Data Types
➢ NumPy - Array Attributes

- NumPy - Array Creation Routines
- NumPy - Array from Existing Data
- Array From Numerical Ranges
- NumPy - Indexing & Slicing
- NumPy - Advanced Indexing
- NumPy - Broadcasting
- NumPy - Iterating Over Array
- NumPy - Array Manipulation

# Tableau

## Tableau
- Tableau - Introduction and Architecture
- Tableau suite and system requirements
- Tableau architecture and Why Tableau
- Tableau installation

## Data in Tableau
- Datatypes and Desktop UI
- Live vs Extract connection
- Dimensions, Measures, Continuous and Discrete

## Sets in Tableau
- Sets in Tableau

## Sorting, Filtering
- Sorting and Filtering
- Advanced filtering

## Parameters
- Parameters in Tableau

## A few basics
- Hide, Unhide, Rename, Copy, Split

## Groups, Folders and Hierarchies
- Groups and Folders
- Hierarchies

## Marks Card
- Marks card, Part 1
- Marks card, Part 2

## Views
- Views in Tableau

## Formatting in Tableau
- Formatting - Font
- Formatting - Alignment, Shading
- Formatting - Border, Lines, Fields, Title, Caption

## Charts in Tableau - Part 1
- Charts' Introduction
- Bar (Column) Charts
- Pie Charts
- Treemap
- Packed bubbles

## Charts in Tableau - Part 2
- Wordmaps or Wordclouds
- Bins and Histogram
- Line Charts
- Scatter Plot
- Text tables
- Maps
- Dual Axes charts, Part 1
- Dual Axes charts, Part 2

## Conditional formatting
- Conditional formatting, Part 1
- Conditional formatting, Part 2

## Table Calculations and Pareto
- Table calculations
- Running total and Pareto Chart

# Microsoft Power BI

## Introduction
- Introduction to Power BI
- Download, Install and Update Features in Power BI

## Basic Charts in Power BI
- Basic Charts in Power BI Desktop
- Column Chart in Power BI
- Stacked Column Chart in Power BI
- Pie Chart in Power BI
- Donut Chart in Power BI
- Funnel Chart in Power BI
- Ribbon Chart
- Include and Exclude
- Export data from Visual

## Working with Maps
- Maps in Power BI
- Creating a Map in Power BI
- Filled Map
- Map with Pie Chart
- Formatting in Map
- Change Background in Map
- Map of India in Power BI
- Map of Australia in Power BI

## Tables and Matrix in Power BI
- Table and Matrix in Power BI
- Creating a Table in Power BI
- Formatting a Table
- Conditional Formatting in Table
- Aggregation in Table
- Matrix in Power BI
- Conditional Formatting in Matrix
- Hierarchies in Matrix
- Sub-Total and Total in Matrix
- Number Formatting in Table

## Other Charts in Power BI

- Other Charts in Power BI
- Line Chart in Power BI
- Drill Down in Line Chart
- Area Chart in Power BI
- Line vs Column Chart in Power BI
- Scatter Plot in Power BI
- Waterfall Chart in Power BI
- TreeMap in Power BI
- Guage Chart in Power BI

## Cards and Filters

- Cards and Filters in Power BI
- Number Card
- Text Card
- Formatting of Text Card
- Date Card
- Date Card (Relative Filtering)
- Multi-Row Card
- Filter on Visual
- Filter on This Page
- Filter on All Pages
- Drillthrough in Power BI

## Slicers in Power BI

- Slicers in Power BI
- Text Slicers in Power BI
- Formatting a Text Slicer
- Date Slicers in Power BI
- Formatting a Date Slicer
- Number Slicers in Power BI

## Objects in Power BI

- Insert Image in Power BI
- Insert Text in Power BI
- Insert Shapes in Power BI
- Insert Buttons in Power BI
- Web URL Action in Power BI
- Page Navigation Action in Power BI

- ➤ Bookmark Action in Power BI
- ➤ Drillthrough Action in Power BI

## Power Query - Text Functions
- ➤ Text Functions in Power Query (Power BI)
- ➤ Merge Columns in Power Query (Power BI)
- ➤ Split and Trim in Power Query (Power BI)
- ➤ Upper,Lower and ProperCase in Power Query (Power BI)
- ➤ Prefix and Suffix in Power Query (Power BI)
- ➤ Left,Right and Mid Functions in Power Query (Power BI)
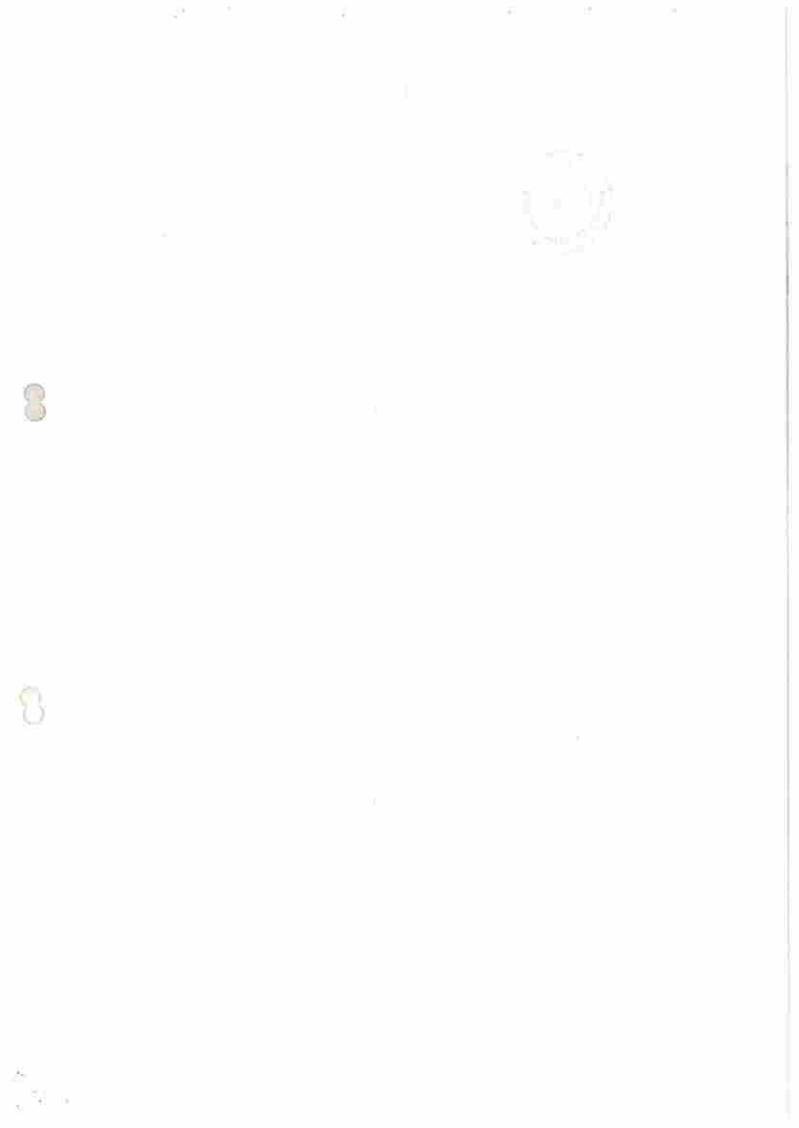- ➤ Extract Text with Delimiters

## Power Query - Number Functions
- ➤ Number Functions in Power Query (Power BI)
- ➤ Basic Number Functions in Power Query (Power BI)
- ➤ Percentage,Percent Of, Module in Power Query (Power BI)
- ➤ Round Functions in Power Query (Power BI)
- ➤ IsEven,IsODD, Sign in Power Query (Power BI)

## Power Query - Conditional Columns
- ➤ Conditional Column and Column from example in Power BI
- ➤ Column from examples in Power BI - Split Text
- ➤ Column from examples in Power BI - Merge Columns
- ➤ Column from Examples in Power BI - Date
- ➤ Column from Examples in Power BI - Alphanumeric
- ➤ Conditional Column in Power BI - One Column
- ➤ Conditional Column in Power BI - two columns
- ➤ Conditional Column in Power BI - Compare two columns
- ➤ Conditional Column in Power BI - on Dates

# Course Details

## 1. Data Science with Machine Learning using Python

| | | |
|---|---|---|
| Duration | : | 35 Hours |
| Fees | : | 550 Rs / per student |
| Internship | : | Free of cost |
| Project | : | Free of cost |
| Mode | : | Online + Offline |

### First interaction with python basics

- Overview, Python Features, Basic Syntax
- Variable Types, Basic Operators,
- decision making, Loops,
- Python Data Structures - Lists and Tuples, Sets Dictionaries, Date & time
- Functions, Scope of Variables, Function overloading, Operator overloading, Objects and Classes.

### Working with Data in Python:

- Reading files with Open, writing files with Open, loading data with Pandas, working with and saving with Pandas.
- Array oriented Programming with Numpy, Data cleaning and preparation, Plotting and Visualization, data Aggregation and Group Operations.

### Supervised Machine Learning

### Machine Learning Module 1

- Introduction of machine learning
- Difference between Supervised, Unsupervised & Semi-supervised
- Linear Regression Mathematical Institution
- Linear Regression assumption.
- OLS
- Different Training methodology
- Train, Test, Validation Split
- Hands-on linear regression in python from scratch

- Complete hands-on with scikit learn
- Overfitting & Underfitting
- Ridge Regression
- Lasso Regression
- Elastic Net Regression
- Polynomial Regression
- Logistics regression
- Difference between Linear Regression and Logistic Regression
- Performance matrix
- Confusion matrix
- Precision, Recall, ROC, AUC Curve
- F-beta Score

## Machine Learning Module 2

- SVR(support vector regressor)
- SVC(support vector classifier)
- SVM(Support vector machine)
- KNN Classifier
- KNN Regressor
- K Nearest Neighbour

## Machine Learning Module 3

- Decision Tree Classifier
- Decision tree Regressor
- Cross Validation
- Bias vs Variance
- Ensemble approach
- Bagging
- Boosting

## Unsupervised Machine Learning

- Introduction to K-Means Clustering
- Hard K-Means clustering
- Soft K-Means clustering
- Visualizing Each Step of K-Means
- How to Choose K value
- Advantages and Disadvantages of K-Means Clustering
- Examples of where K-Means can fail

- How to Evaluate a Clustering algorithm
- Silhouette Coefficient
- Dunn's Index
- Python implementation using K-Means on Real Data
- Real-time Clustering Application

## Data Science

- Introduction to data science,
- why learn Data Science, Applications of Data Science, The Data Science Lifecycle,
- Data Scientist's Toolbox, Types of Data, Structured, semi-structured, Unstructured Data, Problems with unstructured data,
- Data sources, Open Data, Social Media Data, Multimodal Data, standard datasets, Data Formats,
- Role of statistics in data science, Descriptive statistics, Measuring the Frequency,
- Measuring the Central Tendency: Mean, Median, and Mode, Measuring the Dispersion: Range, Standard deviation, Variance, Interquartile Range, Inferential statistics, Hypothesis testing, Multiple hypothesis testing
- Introduction & Descriptive Statistics- In this module, you will learn about the fundamentals of descriptive statistics, which include mean, median, mode, variance, and standard deviation.
- Introduction to Probability Distributions- In this module, we will cover various distributions and understand pdf, pmf and cdf
- Data Preprocessing: Data Objects and Attribute Types: What Is an Attribute? Nominal, Binary, Ordinal Attributes, Numeric Attributes, Discrete versus Continuous Attributes
- Missing Entries, NULLs, Huge Outliers, Out Artificial EofDate Data, ntries,
- Irregular Spacings, Formatting Issues Irregular between Different Tables/Columns,
- Extra Whitespace, Irregular Capitalization, Inconsistent Delimiters, Irregular NULL Format, Invalid Characters, Incompatible Datetimes
- Data Visualization: Introduction to Exploratory Data Analysis, Data visualization and visual encoding,
- Data visualization libraries, Basic data visualization tools, Histograms, Bar charts/graphs, Scatter plots, Line charts, Area plots

Pie charts, Donut charts, Specialized data visualization tools, Boxplots, Bubble plots, Heat map, Dendrogram, Venn diagram,

# Course Details

## 1. Big Data Analytics , Internet of Things (IOT) and Artificial Intelligence

| | | |
|---|---|---|
| Duration | : | 35 Hours |
| Fees | : | 550 Rs / per student |
| Internship | : | Free of cost |
| Project | : | Free of cost |
| Mode | : | Online + Offline |

### Introduction to Artificial Intelligence:

- What is AI, AI and related fields, AI Techniques.
- Defining AI problems as a State Space Search: example Production Systems, Search and Control Strategies, Problem Characteristics
- Heuristic Search Techniques: Hill Climbing, Best First Search, Problem Reduction, Constraint Satisfaction, Mean-Ends Analysis.
- Approaches to Knowledge Representation, Knowledge representation using Propositional and Predicate logic, Conversion to clause form, Resolution in Propositional logic, Unification algorithm
- Statistical Reasoning: Probability and Bayes' theorem, Certainty factor: Rule-based Systems, Bayesian Network, Dempster -Shafer Theory.

### Big Data Analytics

- Types of Data Structured, semi-structured, Unstructured Data,
- Problems with unstructured data, Data sources, Open Data, Social Media Data, Multimodal Data, standard datasets.
- Data Formats, Integers, Floats, Text Data, Text Files, Dense Numerical Arrays, Compressed or Archived Data, CSV Files, JSON Files
- Statistical Data Analysis: Role of statistics in data science, Descriptive statistics,

- Measuring the Frequency, Measuring the Central Tendency: Mean, Median, and Mode, Measuring the Dispersion: Range, Standard deviation, Variance,
- Interquartile Range, Inferential statistics, Hypothesis testing, Multiple hypothesis testing
- Data Pre-processing: Data Objects and Attribute Types: What Is an Attribute? Nominal, Binary, Ordinal Attributes, Numeric Attributes, Discrete versus Continuous Attributes,
- Data Quality: Why Pre-process the Data? Data munging/wrangling operations, Cleaning Data
- Data Visualization: Introduction to Exploratory Data Analysis, Data visualization and visual encoding
- Data visualization libraries, Basic data visualization tools, Histograms, Bar charts/graphs, Scatter plots, Line charts, Area plots, Pie charts

## Internet of Things (IoT)

- Fundamentals of IoT: Basic Concepts of IoT, Architecture, Interaction with the Internet
- Microcontroller Fundamental and Programming: System on Chip, Microcontrollers, Programming Microcontrollers
- Introduction to Raspberry PI, Installation, GPIO, Interfacing, Programming. Features Of Python.
- Introduction to Cloud Computing: Introduction to Cloud Computing, Cloud based Architecture, SaaS, PaaS and IaaS, Benefits risk and challenges of cloud computing platforms and services,
- Introduction to cloud based IoT Platforms like IBM, Bluemix
- Arduino Interface: Arduino Ethernet Interface Connect Arduino using the Ethernet, Arduino Ethernet Library
- IoT Application and Case study: Application of IoT and Case studies: Home Automation, Smart Parking, Water Management, Agriculture, Citizen Safety.