



**Mangalmay Institute of Management Technology**  
Greater Noida (U.P.)



**MANGALMAY**  
INSTITUTE OF MANAGEMENT TECHNOLOGY



# **Data Analysis & Interpretation through Python**



## **BBA**

**27th April to 2nd June 2023**

**Resource Person**

**MS. ANURADHA YADAV**

[www.mangalmay.net.in](http://www.mangalmay.net.in) | Plot No. 8 & 9, Knowledge Park-II, Greater Noida, Delhi-NCR, India



**SYLLABUS**

<b>Session</b>	<b>Course Contents</b>
<b>Session 1</b>	Module 1: Introduction to Python Overview of Python and its popularity Advantages of using Python
<b>Session 2</b>	Module 2: Applications of Python  Real-world applications of Python.  AI/ML and data visualization  Software development
<b>Session 3</b>	Module 3: Python and its Features Introduction to Python's key features: Object-oriented programming Interpreted language High-level programming Dynamic semantics Built-in data structures Automatic garbage collection
<b>Session 4</b>	Module 4: Python Built-in Data Types and Operators Detailed explanation of Python's built-in data types: Boolean Text Numeric List, Tuple, Dictionary, Set, Bytes Overview of Python operators and tokens
<b>Session 5</b>	Module 5: Packages Overview Understanding Python packages and modules Overview of essential packages:  NumPy  Pandas  Scikit Learn  Matplotlib  Seaborn
<b>Session 6</b>	Module 6: Installation Steps and Jupyter Notebook Introduction to Python IDEs and their importance Overview of Python installation steps Introduction to Anaconda distribution and its features



	Anaconda Navigator overview Introduction to Jupyter Notebook and its functionalities Essential shortcuts for using Jupyter Notebook effectively
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**SCHEDULE**

<b>Session</b>	<b>Content</b>	<b>Time</b>	<b>Date</b>
<b>Session</b>	<b>Introduction to Python</b> 1. Welcome and Introduction 2. Why Python? 3. Setting Up Python 4. Python Basics 5. Variables and Data Types 6. Basic Operations 7. Strings 8. Loops 9. Functions 10. Hands-On Exercises	3:00 pm- 5:00 pm	27-04-2023
S2	<b>Advantages of Python</b> 1. Readability and Simplicity 2. Extensive Standard Library 3. flexibility and Versatility 4. Rapid Development 5. Community and Ecosystem 6. Integration and Interoperability 7. Hands-On Demonstration 8. Case Studies	3:00 pm- 5:00 pm	01-05-2023
S3	Application of Python	3:00 pm- 5:00 pm	03-05-2023
S4	<b>Real-world applications of Python</b>	3:00 pm- 5:00 pm	05-05-2023
S5	<b>AI/ML and data visualization</b>	3:00 pm- 5:00 pm	08-05-2023



S6	<b>Software development</b>	3:00 pm- 5:00 pm	10-05-2023
S7	<b>Python and its Features</b> Introduction to Python's key features: Object-oriented programming	3:00 pm- 5:00 pm	15-05-2023
S8	Interpreted language. High-level programming.	3:00 pm- 5:00 pm	18-05-2023
S9	Dynamic semantics Built-in data structures Automatic garbage collection	3:00 pm- 5:00 pm	22-05-2023
S10	<b>Python Built-in Data Types and Operators</b> Detailed explanation of Python's built-in data types: Boolean Text. Numeric List, Tuple,	3:00 pm- 5:00 pm	23-05-2023
S11	Dictionary, Set, Bytes Overview of Python operators and tokens	3:00 pm- 5:00 pm	24-05-2023
S12	<b>Packages Overview</b> <ul style="list-style-type: none"><li>Understanding Python</li></ul>	3:00 pm- 5:00	26-05-2023



	<ul style="list-style-type: none"><li>• packages and modules</li></ul>	pm	
S13	<b>Overview of essential packages:</b> <ul style="list-style-type: none"><li>• Numpy</li><li>• Pandas</li><li>• Scikit Learn</li><li>• Matplotlib</li></ul>	3:00 pm-5:00 pm	29-05-2023
S14	<b>Installation Steps and Jupyter Notebook</b> <ul style="list-style-type: none"><li>• Introduction to Python IDEs and their importance</li><li>• Overview of Python installation steps</li></ul>	3:00 pm-5:00 pm	30-05-2023
S15	<ul style="list-style-type: none"><li>• Introduction to Anaconda distribution and its features</li><li>• Anaconda Navigator overview</li><li>• Introduction to Jupyter Notebook and its functionalities</li><li>• Essential shortcuts for using Jupyter Notebook effectively</li></ul>	3:00 pm-5:00 pm	02-06-2023



## **PROFILE OF THE RESOURCE PERSON**

**MS. ANURADHA YADAV, Data Analytics Trainer**

### **EDUCATIONAL QUALIFICATION**

**B.Tech in INFORMATION TECHNOLOGY from Purvanchal University. Working as Assistant Professor in MANGALMAY INSTITUTE OF ENGINEERING AND TECHNOLOGY**

- **ERP CO-Coordinator and IT CLUB Member.**
- **6 month of Experience as Assistant professor in GNIOT.**
- Working as a **placement coordinator** from IT Department.
- Active member of **ALUMNI Coordinator**.
- Assisting with various department activities.
- Attending faculty and departmental meetings and providing suggestions for improvement.
- Teaching and supervising undergraduate student.
- **2 Year of experience in Prasad institutions in Lucknow**
- **Attend International conference on “c#” organized by SHARK IN DELHI.**
- **3 Month training experience on ASP .NET framework and database as SQL server.**
- **2 Month learning course on Python**
- Have good knowledge on writing SQL queries to pull the reports from the DB.
- Expertise in developing **courier Portal** web application using **.NET Framework, java script, HTML** and database using SQL server.
- Have been involved in the entire project life cycle starting from requirement gathering to implementation.
- Experienced interacting directly with customers on numerous occasions; to gather requirements, develop, debug and solve critical issues and introduce them to new product feature.



Report	
Name of Activity	Add ON Certificate ON Data Analysis and Interpretation through Python
Date	27 <sup>th</sup> April 2023 – 02 <sup>nd</sup> June 2023
Venue	Computer Lab, MIMT
Organized by	Management Department
Participation by	BBA I Year students (100)
Resource Person	Ms. AnuradhaYadav, Data Analytics Trainer.
Activity Convener	Ms. Shakti Shukla & Ms. SonaliChauhan(MIMT Faculty)
Objective	<p>The objective of this activity is to make the students understand <b>Your Data</b>: Python allows you to explore and understand your data better. By using libraries like Pandas, you can clean messy data, handle missing values, and format it in a way that makes sense. <b>Visualize Your Findings</b>: Python offers libraries like Matplotlib and Seaborn to create cool graphs and plots. These visuals help you see trends and patterns in your data more easily. It's like turning boring numbers into colorful pictures! <b>Answer Interesting Questions</b>: With Python, you can dive into your data to find answers. Want to know which factors affect student grades the most? Or how different study habits impact exam scores? Python lets you ask these questions and find the answers in your data. <b>Predictive Superpowers</b>: Using Python's machine learning libraries like Scikit-learn, you can build models that predict future outcomes. Imagine predicting the next test score based on previous performance, or whether a student will pass a course based on their study habits. It's like having a crystal ball for your data! <b>Tell a Story with Data</b>: Python helps you craft a story with your data. You can create reports and presentations using Jupyter Notebooks or other tools. It's not just about crunching numbers; it's about sharing your discoveries in a way that others can understand and learn from. <b>Get Job-Ready Skills</b>: Learning data analysis with Python is a valuable skill for many careers. Whether you're interested in science, business, social sciences, or technology, being able to analyze data sets you apart. Plus, Python is widely used in the industry, so it's a great skill to have on your resume! <b>Have Fun with Data</b>: Lastly, Python makes data analysis fun! It's like solving puzzles or uncovering secrets in your data. You can explore topics you're curious about, like sports stats, social media trends, or even your own school performance.</p> <p>So, the objective of learning data analysis and interpretation through Python is not just about numbers and code. It's about gaining insights, answering questions, telling stories, and having a blast while doing it!</p>
Content	<p>Python is the most effective tool for managing and analyzing data of all kinds. Its increasing use in several management functional areas is generally recognized. This dynamic tool provides several options for not only making the task easier, but also for improving the sophistication of data reporting and analysis.</p> <p>This Certificate Course was the initiative taken under the aegis of IQAC, Mangalmay Institute of Management and Technology, for</p>



undergraduate students.

The programme extended for a period of 16 days, covering two hours per day (theory and practical - 1 hour each)

Topics covered under the program are as follows:

### **Day 1**

The resource person had an introductory session based on the overview of the python, where he discussed how such programs always give an edge to the students when it comes to working in the corporate world. Knowledge of python has become the essential part of every business and job.

### **Introduction to Python**1. Welcome and Introduction 2. Why Python?

3. Setting Up Python4. Python Basics5.Variables and Data Types6.Basic Operations 7.Strings8.Loops9.Functions 10.Hands-On Exercises

### **Day 2**

**Advantages of Python**1.Readability and Simplicity 2.Extensive Standard Library 3.flexibility and Versatility 4. Rapid Development5. Community and Ecosystem6. Integration and Interoperability7. Hands-On Demonstration8. Case Studies.

### **Day 3 & 4.**

- Application of Python.
- Real-World Application of Python

### **Day 5& 6.**

- AI/ML and data visualization
- Software development

### **Day 7- Python and its Features**

- Introduction to Python's key features:
- Object-oriented programming

### **Day 8 –**

- Interpreted language.
- High-level programming

### **Day 9-**



- Dynamic semantics Built-in data structures
- Automatic garbage collection





	<p><b>Day 10- Python Built-in Data Types and Operators</b></p> <ul style="list-style-type: none"><li>• Detailed explanation of Python's built-in data types:</li><li>• Boolean</li><li>• Text.</li><li>• Numeric List,</li><li>• Tuple,</li></ul> <p><b>Day 11-</b></p> <ul style="list-style-type: none"><li>• Dictionary,</li><li>• Set,</li><li>• Bytes Overview of Python operators and tokens</li></ul> <p><b>Day 12- Packages Overview</b></p> <ul style="list-style-type: none"><li>• Understanding Python</li><li>• packages and modules</li></ul> <p><b>Day 13- Overview of essential packages:</b></p> <ul style="list-style-type: none"><li>• Numpy</li><li>• Pandas</li><li>• Scikit Learn</li><li>• Matplotlib</li></ul> <p><b>Day 14-</b></p> <p><b>Installation Steps and Jupyter Notebook</b></p> <ul style="list-style-type: none"><li>• Introduction to Python IDEs and their importance</li><li>• Overview of Python installation steps</li></ul> <p><b>Day 15-</b></p> <ul style="list-style-type: none"><li>• Introduction to Anaconda distribution and its features</li><li>• Anaconda Navigator overview.</li><li>• Introduction to Jupyter Notebook and its functionalities</li><li>• Essential shortcuts for using Jupyter Notebook effectively</li></ul>
Assessment	At the end of the Data Analysis and Interpretation through Python



	<p>program there was an assignment to assess the understanding level of the students. Students were assessed on the basis of the projects assigned to them.</p> <p>Projects assigned to the students:</p> <p> Western Inventory.txt</p> <p> 07_01 Challenge.xlsx</p>
<p>Outcome of Activity</p>	<p>After undergoing the aforementioned programme, students were able to reap the following benefits:</p> <ul style="list-style-type: none"><li>● Automatic computation to cells with formulas</li><li>● Instead of performing the computation manually, the Python can help students with their computational ease.</li><li>● Python can support decisions by coding conditional statements like IF, IF-ELSE statements inside the cell.</li><li>● Python supports numbers of columns and rows which can contain large amount of data and computations. Hence students will be able to analyse large amount of data through Data Analytics.</li></ul> <p>At the end of Data Analysis and Interpretation through Python the program, students were able to understand the basic and advanced concepts of Python along with its practical applications. They were assessed on the basis of their theoretical and practical knowledge at the end of the session. Students received the certificates after the successful completion of their Data Analysis and Interpretation program through Python</p>



M.M.: 40

30/40

Date: 02/June

Duration: 02:00 HRS

General Instructions:

Attempt all the questions.

Write your name & enrolment no. neatly.

Each of the questions is followed by 4 options. Select the best or most appropriate one & tick in the appropriate box.

Name: MANSI KISHRA

Enrolment No. \_\_\_\_\_

Student's Sign. Mansi

Invigilator's Sign \_\_\_\_\_

Instructions: Attempt all the questions. Each question carries 2 marks

1-What library in Python is commonly used for data manipulation and analysis?

- A) Matplotlib
- B) Pandas
- C) NumPy ✓
- D) Scikit-learn

2

2-Which of the following is NOT a valid data structure in Pandas?

- A) DataFrame
- B) Series
- C) Array
- D) Panel

2

3-In Pandas, how would you select the first 5 rows of a DataFrame named "df"?

- A) df.head(5) ✓
- B) df.first(5)
- C) df.select(5)
- D) df.top(5)

2

4-What function is used to read a CSV file into a Pandas DataFrame?

- A) Pd.read\_csv () ✓
- B) pd.load\_csv()
- C) pd.import\_csv()
- D) pd.read\_file()

2

5-Which of the following methods is used to calculate the mean of a Pandas Series?

- A) Series.avg ()
- B) Series. Mean ()
- C) Series. Average () ✓
- D) Series. Median ()

2

6-What does Matplotlib.pyplot.show () do?

- A) Saves the plot to a file
- B) Displays the plot ✓
- C) Closes the plot

2



D) Plots the data

7-Which library is best suited for creating interactive visualizations in Python?

- A) Pandas
- B) Seaborn
- C) Matplotlib
- D) Plotly

8-What function is used to merge two DataFrames in Pandas?

- A) pd.combine()
- B) pd.merge()
- C) pd.concat()
- D) pd.join()

9-How do you handle missing values in a Pandas DataFrame?

- A) df.handle\_missing()
- B) df.remove\_na()
- C) df.fillna()
- D) df.dropna()

10-Which of the following is a statistical measure of the linear relationship between two variables?

- A) p-value
- B) R-squared
- C) Standard deviation
- D) Mean absolute error

11-What function is used to plot a histogram in Matplotlib?

- A) plt.plot()
- B) plt.bar()
- C) plt.hist()
- D) plt.scatter()

12-In Pandas, what does the describe () function do when applied to a DataFrame?

- A) Returns the summary statistics of numerical columns
- B) Describes the structure of the DataFrame
- C) Counts the missing values in the DataFrame
- D) Plots a visual summary of the data

13-Which library provides the seaborn package for statistical data visualization?

- A) Pandas
- B) Matplotlib
- C) Scikit-learn
- D) NumPy

14-How would you sort a Pandas DataFrame in descending order based on values in the 'Score' column?

- A) df.sort('Score', ascending=True)
- B) df.sort\_values('Score', ascending=False)
- C) df.order\_by('Score', ascending=False)



D) `df.sort('Score', ascending=False)`

**15-What is the primary purpose of the `groupby()` function in Pandas?**

A) Group rows based on a specific column ✓

B) Sort rows in ascending order

C) Filter out missing values

D) Apply a function to each row

(2)

**16-Which of the following methods is used to remove duplicate rows in a Pandas DataFrame?**

A) `df.remove_duplicates()` ✓

B) `df.drop_duplicates()`

C) `df.clean_duplicates()`

D) `df.remove_repeats()`

(2)

**17-What is the purpose of the `pivot_table()` function in Pandas?**

A) Reshape a DataFrame

B) Calculate summary statistics by groups ✓

C) Create a new column

D) Plot a pivot chart

(2)

**18-What does the seaborn library add to Matplotlib for data visualization?**

A) Statistical data analysis functions

B) Interactive plotting capabilities

C) Additional plot styles and themes ✓

D) Machine learning algorithms

(2)

**19-How would you calculate the sum of values in the 'Salary' column of a Pandas DataFrame `df`?**

A) `df['Salary'].sum()` ✓

B) `df.sum('Salary')`

C) `df.sum(axis=1)`

D) `sum(df['Salary'])`

(2)

**20-Which of the following methods is used to merge two DataFrames in Pandas?**

A) `pd.combine()`

B) `pd.merge()` ✓

C) `pd.concat()`

D) `pd.join()`



**Glimpses of the Python Certification Program:**

Introductory session of the Python program.







Students working on python in Computer Lab





# Certificate of Participation

Is Hereby Granted To

Mr./Mrs. *Pallavi Mishra*

To Certify That He/She Has Successfully  
Attended Workshop On *Data analysis and Interpretation through Python*

On Date *27<sup>th</sup> April - 2<sup>nd</sup> June 2023* We Wish Him/Her All Success In Life

**Blagic Software Technology Pvt. Ltd.**

Plot No : A-40, Unit No:-A 207, 2nd Floor, I-Thum Tower, Sector 62  
Nearby Metro Station, Noida Electronic City, Noida - 201309

*Nayan Verma*  
Nayan Verma  
Director