

**Week 1: Time Series Analysis (Total video duration= 1.68 Hours. You will be required to spend around 15 minutes/day along with practicing datasets and quizzes)**

## Learning Outcomes from the Module:

After learning from this module, learners will be able to understand:



Why is forecasting important and how to forecast?



Understanding Time Series data, examples of Time Series Data, Important concepts to remember while gathering time series data.



Dealing with Missing Data in Time Series Analysis and Exploratory Analysis of the same



Understanding Decomposition Models and why is Decomposition important. Trends and Seasonality in Time Series Analysis



Working on Python to read time series data, understanding how decomposition models work on Python and modifying TS forecast range



**Mentor Session Duration:**  
2 hours

**Faculty Name:**  
Dr. Abhinanda Sarkar

**No. of videos:**  
1.68 hours

| Video No. | Video Name                                     | Duration of the video(mins) | Topics Covered   | Conceptual or Hands On |
|-----------|--|-----------------------------|--|------------------------|
| 1         | Why Forecast and How to Forecast               | 10:51                       | The need to forecast, what is a time series forecasting method and Quarterly Retail Turnover example to understand the same.                           | Conceptual             |
| 2         | What is Time series                            | 05:41                       | Sequence of measurements made at regular time intervals on the same variable collected over time is Time Series.                                       | Conceptual             |
| 3         | Examples of Time series                        | 14:36                       | Various Time Series examples   | Conceptual             |
| 4         | Some important concepts to know in Time series | 12:03                       | Collecting multiple items at the same point of time is not a Time Series or when time periods are not same.  | Conceptual             |
| 5         | Missing Data and Exploratory analysis          | 02:18                       | Treatment of missing data is important for time series analysis by imputation/averaging/internal forecasting.  | Conceptual             |
| 6         | Components of Time series                      | 11:02                       | Trend and Seasonality are the Systematic components of Time Series derived from the patterns in the data. There is also an irregular/random component. | Conceptual             |

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| 7         | Decomposition                  | 20:19                        | Understanding the need to decompose data, what is decomposition model and some examples of it. | Conceptual             |
| 8         | Time series Hands_On in Python | 24:14                        | Hands-On   | Hands-On               |

## Few textbooks that you can refer to:

1

### **Time Series Analysis**

By James Hamilton

2

### **Introduction to Time Series and Forecasting**

by Brockwell and Davis

