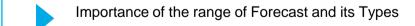
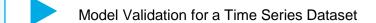


Week 2: Time Series Analysis (Total video duration= 1.06 Hours. You will be required to spend around 12 minutes/day along with practicing datasets and quizzes)

Learning Outcomes from the Module:

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





Moving Average forecast and performing Hands-On in Python

Exponential Smoothing

Comparing different Forecast models and evaluating their performance through measures like RMSE





Mentor Session Duration: Faculty Name:

No. of videos:

2 hours Dr. Abhinanda Sarkar

1.68 hours

| Video No. | Video Name | Duration of the video(mins) | Topics Covered | Conceptual or Hands On |
|-----------|--------------------------------------|-----------------------------------|--|---------------------------|
| 1 | Forecast Range and Scope | 10:12 | The range of forecast matters and it should be done for a very long period of time. While gathering historical data, the information should not be from long past or limited in volume | Conceptual |
| 2 | Forecast | 04:28 | Multiple types of forecasting techniques like Naive Forecast, Moving Average Forecast and Average Forecast. | Conceptual |
| 3 | Model Validation | 07:51 | Understanding Model Validation and how Training data is used to identify a few working models which are tested against observed values of the series for a hold out period. | Conceptual |
| 4 | Forecast by Average | 00:36 | Using Average Forecast ignores Trends and Seasonality and naturally does not work in most cases. | Conceptual |
| 5 | Introduction to Forecasting_Hands-on | 14:12 | Building different models on a dataset in a train-test scenario and evaluating those models. | Hands_On |
| 6 | Exponential Smoothing Introduction | 00:51 | Incorporates Trends and Seasonality and gives different parameters of interpretation. | Conceptual |



Mentor Session Duration:Faculty Name:No. of videos:2 hoursDr. Abhinanda Sarkar1.68 hours

| Video No. | Video Name | Duration of the video (mins) | Topics Covered | Conceptual or Hands On |
|-----------|--------------------------------|---------------------------------|---|---------------------------|
| | | | | |
| 7 | Exponential Smoothing method | 16:21 | It is a weighted average of past observations where only recent observations matter and weights decay as observations get older. Understanding Holt Winters model and Double Exponential Smoothing. | Conceptual |
| 8 | Exponential Smoothing_Hands-on | 08:45 | Hands-On | Hands-On |
| 9 | Concluding Video | 00:41 | How Time Series is incorporated in Python, how timestamps are created, how seasonal patterns and trends are recovered through decompositions and how they can be directly modelled through differences and linear regression and how they can be measured through RMSE. | Conceptual |



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

