





# DSBA CURRICULUM DESIGN

## FOUNDATIONS

**Data Science Using  
Python**

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**Statistical Methods  
for Decision  
Making**

## CORE COURSES

**Advanced Statistics**

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**Data Mining**

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**Predictive Modelling**

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**Machine Learning**

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**Data Visualization**

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**SQL**

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**Time Series  
Forecasting  
(Week-1/4)**

## DOMAIN APPLICATIONS

**Financial Risk  
Analytics**

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**Marketing Retail  
Analytics**

# LEARNING OBJECTIVE OF THIS COURSE

- Time Series Analysis
- Time Series Forecasting –  
Introduction to Forecasting
- ARIMA Models

# LEARNING OBJECTIVES OF THIS SESSION

- Time Series Analysis – A descriptive view of Time Series
- Exploratory Data Analysis for Time Series data



## TRY ANSWERING THE FOLLOWING

- If the Time Series data has missing values, we are allowed to drop those data points from our analysis. – True or False? Discuss.
- The residuals in a decomposition of a Time Series gives us the idiosyncratic part of the series which is not picked up by the Trend and Seasonality. – True or False?



## BROAD OVERVIEW

- Time Series Analysis is about exploring the Time Series data from a descriptive perspective. In this session, we are not going to forecast or predict. We will look at the Time Series data from various perspectives to understand the behaviour of the data over time.
- We are going to use the statistical descriptive tools and techniques that has been learnt previously but we will see how to use those techniques to describe the data over time.
- In this session we will look at the question, “What does the data tell us?”

## Industry Application – Predicting Stock Prices

Time Series Forecasting procedures are used to predict stock prices or sales. Till now we have seen how to predict sales using cross-sectional data but not Time Series.

The following is the stock price data of Tesla from the year of 2017. Sophisticated Time Series Forecasting models are used to predict stock prices.\* We can also attempt to describe the this particular Time Series using the methods learnt in this week's video lectures.

date	close	volume	open	high	low
2017/11/17	315.0500	13720830.0000	325.6700	326.6700	313.1500
2017/11/16	312.5000	5794409.0000	313.9900	318.1400	311.3000
2017/11/15	311.3000	5951835.0000	306.0100	312.4900	301.5000
2017/11/14	308.7000	5661904.0000	315.0000	316.3500	306.9000
2017/11/13	315.4000	7565242.0000	300.1300	316.8000	299.1100

Data Taken from [Yahoo Finance](#)

\* We will also look at using Time Series as a forecasting tool in the upcoming weeks.

## **CASE STUDY- Analysing Beer Production in Australia**

“Prediction is difficult, especially about the future.”

Keeping the above statement in mind, we will analyse the data and try to understand the production of Beer across various years in Australia. We will use the descriptive statistics measures to do so. We will also do a plot of the Time Series, decompose the Time Series data and try to understand how beer production has changed over the past years.





**ANY QUESTIONS**



**HAPPY LEARNING**