

## Background

Organizational activities and resource management involved with high uncertainty leads to difficulties in handling various managerial activities like procurement, demand, resource acquisition and resource management. Hence, forecasting has attracted substantial attention in recent years and it is one of the most important activities within an organization. Forecasting is one of key focus areas of the different industries. Forecasting help managers and policy makers to plan their business. Without accurate forecasting it is difficult to make proper business plan. Time series analysis used in various area of research include Operations, Finance, Economics, etc. Forecasting is generally used for future planning.

## Objectives

- To familiarize the participants with the importance of forecasting in business.
- To familiarize the participants with different tools and techniques to analyze the data patterns in order to identify suitable forecasting models.
- To introduce the participants with different traditional and advanced forecasting techniques dealing with both homoscedastic and heteroskedastic data using MATLAB and Python.



**IIM**  
SHILLONG

## 5-days workshop on Comprehensive Time Series Forecasting 6<sup>th</sup> – 10<sup>th</sup> June, 2022



**Indian Institute of Management  
Shillong, Umsawli,  
East Khasi Hills  
Meghalaya-793018, India**

## Topics to be covered

- Introduction to forecasting, type of forecasts, purpose of forecasting, steps in forecasting, type of data pattern: horizontal, trend, seasonal and cyclical.
- Exploring data pattern for stationary, non-stationary, trend, seasonal data series, lag, time series plot, run test, Durbin Watson test, autocorrelation function (ACF), PACF plot, Ljung-Box Q test Transformation of data series.
- Time series moving average models: simple moving average, centered moving average, weighted moving average, double moving average. Exponential smoothing models: Single exponential smoothing, double exponential smoothing (Holt's model), triple exponential smoothing (Holt-Winters') model.
- Autocorrelation function (ACF), Partial Autocorrelation function (PACF), stationarity test: Unit root test (ADF test, KPSS test, PP test).
- Autoregressive (AR) model with order one and higher order, Moving average (MA) model with one and higher order, ARMA, ARIMA model.
- Engle's ARCH test, Ljung-Box Q-test, variance ratio test, Different models to deals with heteroscedastic data series like ARCH, GARCH, EGARCH, GJR.
- Introduction to Deep Learning and neural networks, prediction using different models like MLP, CNN, LSTM, LSSVM.

- Introduction to Machine Learning for Business Forecasting; LASSO, Ridge Regression, Elastic net, SVM.
- Decision tree: Random forest, Ensemble and practice session
- Discussion of various research articles with applied time series models.

## Pedagogy

- Lectures and Research papers/Case Studies discussion
- Hands-on with MATLAB and Python
- Study Material Provision for Pre-class preparation

**Mode of the Workshop:** Online

### **Who can join:**

Research Scholars, Academicians and industry practitioners intending to apply various traditional and advanced time series models in their work are invited.

The registration includes

- ✓program certificate
- ✓study material (softcopy of reading material)
- ✓software access.

### **Registration fee:**

Rs.10,000 + GST (18%) per participant.

### **Registration process:**

\*For registration [Click Here](#)

\* Once payment done keep a copy and share a copy of the payment to email id: [sj@iimshillong.ac.in](mailto:sj@iimshillong.ac.in).

**Upon receipt of the online registration form and fee remittance receipt, participants will be sent confirmation of their participation through email by May 31, 2022.**

**Candidates are advised to register at the earliest as the number of seats is limited.**

“Businesses can be competitive when they use forecasting methods in their processes”.

## About IIM Shillong

Located in the green contours of the North-Eastern part of the country, IIM Shillong commenced its operation in 2008. It remains committed to excellence in management education and research to evolve into a national and internationally recognized educational institute. High-quality standards and academic rigor are considered the hallmark of IIM Shillong. IIM Shillong emphasizes sustainable development in business practices. The institute strives to impact its students' ethical values, compassionate behavior, and concern for society.



## Resource Persons



**Prof. Sanjita Jaipuria**

Operations and Quantitative Techniques

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## Contact Us

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