Five Day
Professional Development Programme
on
Data Science for Financial Engineering

Strategic Information Technology & Consulting Services (SITCS) announces its exclusive Five Day Professional Development Programme on '**Data Science for Financial Engineering'**. The program covers all aspects related to problem solving in finance through the use of mathematical and statistical methodologies with application of modern Data Science engineering methods and algorithms with real world hands-on use cases.

Course Introduction

To solve problems in finance in today's technology-driven markets, professionals must be able to apply mathematics, computational techniques, statistical analysis and economic theory. Financial Engineering is a multidisciplinary field involving financial theory, engineering methods, mathematical tools.

The course aims at enhancing the analytical skill set of the participants related to risk management of Financial Derivatives, Portfolio Structuring, Asset and Liability Management and Capital Adequacy Participants who complete this certificate will be able to apply engineering solutions to the finance industry and to see the landscape from a more quantitative perspective, enabling them to uncover create solutions to emerging problems.

Course Deliverables

The course is designed to be exercised much practically, hands-on with real world case studies and business scenarios using the most widely used statistical and analytical application in industry for financial analytics i.e. R software.

- Introduction to Financial Engineering

- Data Science and its importance

- Time Series Analysis

    - Multivariate Time Series Analysis

    - Volatility Modeling

    -Use case on calculating log returns from closing stock prices

- Factor Models

    -Use case on estimating Arbitrage Pricing Theory with PCA

- Forecasting

    -Use case on Volume forecasting model for stocks

- Advanced Analytics

    -Working with bigdata k-Means clustering

    Working with big data Linear Regression Analysis

    -Use case on Income Tax ZIP Code of U.S IRS

- Interest Rate Derivatives and Models

    -Working with Black's model, Vasicek Model, Cox-Ingresoll-Ross Model

    -Use case on Parameter Estimation of interest rate models

- Optimal Hedging

Hedging and Market Risk of derivatives

-Working with delta hedging

-Use case on hedging in the presence of transaction costs.

· Improving Portfolio Performance

· Understanding the Technical Analysis(TA) toolkit

   -Plotting charts-bitcoin

· Forecasting bitcoin prices with neural networks

· Asset and Liability Management

   -Working with cash-flow

   -Interest rate risk measurement

· Capital Adequacy

   -Understanding Principles of Basel Accords for minimizing risk of insolvency

   -Understanding Risk Measures

   -Working with Analytical VaR (Value at Risk) & Historical VaR

   -Working with Monte Carlo simulation.

Prerequisites

Basic concepts of Finance

Basic concepts of Statistics

Knowledge of Mathematics

Target Participants

Financial Analysts, Data Analysts, Accounting Professionals, Research Scholars, Faculty
Members and Students engaged in management education (MBA-Finance) who all wish to gain an edge of Data Science applications in Finance, can all take the course.

Duration

The course is offered for five training days.

Course Fee

The course fee shall be 5000/- per participant.

Learning Outcome

Upon completion of this course, participant will be capable of Using R for analyzing time series data, prepare various graphics and descriptive statistical tables, build predictive model for financial

data management and research.

After completion, participants will be able to:

1. Apply and critically evaluate finance and investment theory with particular reference to the operation of financial markets.

2. Identify, define and analyse financial engineering problems and identify and create process to solve them.

3. Demonstrate advanced numeracy and quantitative skills

4. Critically evaluate corporate finance techniques