

Online
***Certification Program on
Business Analytics and Data Mining***

**During December 2020 – February 2021
[16 days]**



Conducted by:
SQC & OR Unit, Mumbai
Indian Statistical Institute,
Room No 320, 3rd Floor Old C G O Building
101 Maharshi Karve Road, Mumbai 400 020:
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Introduction:

Business analytics refers to the skills, technologies, practices for continuous iterative exploration and investigation of past business performance to gain insight and drive business planning. Data mining is the set of methods and techniques for exploring and analyzing large data sets, in an automatic or semi-automatic way, in order to find among these data certain unknown or hidden rules, association or tendencies. Both the topic requires analysis of data using statistical and quantitative techniques using various software. This program is planned to impart basic skill of data analysis is using appropriate statistical techniques and machine learning techniques.

About the Institute:

The Indian Statistical Institute is a quasi central organization under the Ministry of Statistics & Programme Implementation. It is declared by an Act of Parliament as an Institute of National Importance. Over the years the Institute has grown as a multi-disciplinary organization. It functions as a University empowered to award degrees up to Ph.D.; as a Corporation in undertaking large scale projects; as a Firm of Consultants to industries to improve Quality, Reliability and Efficiency and as a meeting place.

Programme Objectives:

This program is designed to guide business analytics/ data mining professionals in extracting implicit, previously unknown and potentially useful knowledge from large data sets, developing performance models & usage of optimization techniques.

Program Benefits:

The participants will acquire the knowledge on, various statistical and analytical techniques requires for business analytics and data mining. All the topics will be covered using R-studio and MS-Excel.

Course Coverage:

The course is divided in 5 modules as follows:

Module – 1: Introduction, Basic Concepts and EDA

- Introduction to Analytics and concepts of statistical / machine learning / analytics problems. Introduction to random experiments and random variable,
- Descriptive Statistics and Graphs & Charts for data visualisation
- Sampling Concept and Methods
- Probability and Distributions, understanding normal distribution, brief introduction to some useful distributions, probability computations
- Exploratory Data Analysis
- Introduction to R programming (writing R codes for data manipulation and simple graphics as well as basic statistical computations) with hands on exercises.

Module – 2: Hypothesis Testing and Prediction Modelling-1

- Estimation and hypothesis Testing
 - Estimation of parameters like means, variances, proportions and model parameters in different circumstances and their usages in analytics;
 - Formulating hypotheses in real life scenarios
 - Test for means, variances, proportions, odds ratios and relative risks
- Correlation and Regression, Scatter plot, Mean Plot and Scatter plot smoothing
- Concepts of cross validation – usage of validation set, LOOCV, k fold cross validation and concepts of bootstrap.
- Multiple linear regressions, Stepwise and Best Subset Regression, Model selection criteria (AIC, BIC etc.)

Module – 3: Prediction Modeling -2

- Multiple Linear Regression – polynomial and basis function expansion; Ridge and Poisson Regression
- Logistic regression; Assessment of classification model using ROC, AUC
- Introduction to censored data, Survival analysis models
- Nonparametric estimation of survival probability using Kaplan – Meier method
- Classification and Regression Tree including concepts of bagging, random forests and boosting, fitting and validating tree based models

Module – 4: Forecasting and Segmentation

- Forecasting Models exponential smoothing (Holt and winters model) and ARIMA.
- Cluster analysis, hierarchical and non-hierarchical cluster
- Factor Analysis
- Linear and Quadratic Discriminant Analysis
- Support Vector Analysis and K-nearest neighbour

Module – 5: Neural Network and Deep Learning:

- Association rule mining (Market Basket) analyses
- Artificial Neural Network and introduction to deep learning
- Bayesian Methodology - Naïve Bayes classifier; Monte Carlo Markov Chain (MCMC), Bayesian regression trees
- NLP and text mining

Wrap-up and test:

After each module assignments will be given. Participants need to carry out the assignments and present the finding in first day of next module.

Target Participants:

- Managers / Executives/ Professionals/ Students associated with data analysis or planning to make career in Analytics.
- [Should be a graduate in any discipline.](#)

[Note: The participants should have a basic understanding of calculus, matrices and linear algebra. Attending the program without this background is possible, but likely to be more challenging.]

Schedule:

December	04-06:	Module – 1 (Friday, Saturday and Sunday)
December	18-20:	Module – 2 (Friday, Saturday and Sunday)
January	8-10:	Module – 3 (Friday, Saturday and Sunday)
January	22-24:	Module – 4 (Friday, Saturday and Sunday)
February	5 - 7:	Module – 5 (Friday, Saturday and Sunday)

Faculty:

Experienced faculties of SQC & OR Division having in-depth experience in data analysis and its application in various industries.

Course Fee:

- INR 60000/- per participant + 18% GST (INR 70800/-) **for corporate/sponsored persons**
- INR 50000 per participant + 18% GST (INR 59000/-) **for students and individual participants**
- US\$ 1000 for overseas participants (inclusive of course material).

Registration:

- Please send your nomination along with appropriate course fee in the attached registration format. Before making online payment, please check eligibility and availability of seats. Fees once paid will not be refunded under any circumstances
- Registrations are done on 'first come first served' basis.

Important Dates:

Last date of submission of nominations: *November 30, 2020*

Program dates: *December 4-6 & 18-20, 2020; January 8-10 & 22-24, 2021 and February 5-7, 2021*

Timing: **9:30 hrs - 17:30 hrs**

Online Test and wrap-up: *20th February 2021*

Venue:

Online

The program will use **Microsoft Teams** as on-line platform. Participants must sign up in Microsoft Teams (<https://www.microsoft.com/en-in/microsoft-365/microsoft-teams/group-chat-software>) with the same e-mail id which they will provide in their nomination form. We will have trial session before commencing the program.

Sponsored/Individual/Overseas

**Training Programme on
Certification program for Business Analytics and Data Mining
December 2020-February-2021**

Organization:

Mailing Address:

Contact Person:

E-mail:

Phone: Fax :

Details of the participants attending the program:

1. Name :

Position :

2. Name :

Position :

*Details of DD/Cheque attached (Rs *) per participant inclusive of GST @18%) in favour of "Indian Statistical Institute" payable at Mumbai*

Amount : _____

DD/Cheque No. : _____ Date : _____

Bank : _____ Branch : _____

Signature : _____ Name : _____ Date : _____

Bank Details for online payments [please inform details of online payment to office]

Bank Name: STATE BANK OF INDIA

Bank Account No: 10996682279

Account Name: INDIAN STATISTICAL INSTITUTE, Type: Current

Branch: MUMBAI MAIN BRANCH

Bank Address: MUMBAI SAMACHAR MARG, HORNIMAN CIRCLE, FORT
MUMBAI 400023

IFSC code: SBIN0000300

Signature :

Name : _____ Date _____

Xerox copy of this form may be used in case of more participants. Please e-mail the form to: sqcbombay@gmail.com or send to :

Program Director, SQC & OR Unit, Indian Statistical Institute, Room No,320, 3rd Floor, Old CGO Bldg,101, Maharshi Karve Road, Mumbai 400 020

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