



Indian Statistical Institute
SQC & OR Unit, Hyderabad
Announces



Certification Program on

Business Analytics

With a focus on

Data Science

Machine Learning

Artificial Intelligence

Duration

February – June, 2019
(Starting on 23rd Feb. 2019)

Weekend Program

Saturdays and/or Sundays
(20 Days)

Last Date for Registration
18th February, 2019

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Program Facilitator

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G Murali Rao
Program Director

Introduction

Indian Statistical Institute, Hyderabad announces a certification program on "**Business Analytics**" during February to June 2019 (Scheduled Saturdays and/or Sundays). "DATA" is gradually becoming the primary corporate resource and Data Science, Machine Learning and Artificial Intelligence are turning out to be the three important business drivers. The need of the hour is to effectively identify the highly impactful business information hidden in the Data and develop intelligent business models for achieving maximum customer satisfaction, beating competition and profitability. Statistical & Machine Learning methods help in developing robust predictive models for building Intelligent Systems which can help in taking futuristic decisions and actions. The core objective of this program is to develop the Statistical & Analytical skills of individuals so as to enable them to analyse big and multidimensional complex data in the most efficient & effective manner and building predictive business models for developing business strategies.

Business Analytics

The core objective of Business Analytics is to provide optimal business solutions using the predictive models developed using data and analytics. Present day Business is being driven by 3 D's (Data, Dimensions and Discovery). In this highly competitive, customer dominating and cost sensitive market, success of an organization is becoming directly proportional to its ability to extract maximum information from the tera/penta... bytes of complex **Data** on multiple **Dimensions** of customers/organizational processes for **Discovering** the unknown strategies of achieving Business Excellence. Business analytics can be efficiently executed by individuals trained in Statistical and Optimization Techniques for effectively handling Big Data. Traditional data analysis methods are no doubt required but they are not efficient for handling multidimensional big data for predictive analytics.

Data Science

Data based decision making is the key to success in any walk of life. Data especially Big data is a collection of large volumes of data (structured as well as unstructured) archived across all stake holders of an organization over a number of years and made available for analysis. The need for scientific analysis of data arises from the fact that it has the potential to predict and provide the hidden, unseen, unknown information which has the capability to transform an organization in the market. These large and complex data cannot be processed efficiently using traditional methods & tools. Challenges in analysis include understanding, cleaning, searching, visualization, modelling, prediction etc. Statistical Methods, both advanced as well as simple provide excellent techniques to analyse big data efficiently

Machine Learning & Artificial Intelligence

The complexity of data and the corresponding business problems are throwing up challenges in developing predictive models/algorithms which are not only accurate and efficient but also flexible to address the dynamic scenarios of real-life. Powerful data science methods and access to faster computational systems in the present day are helping in developing machine learning predictive models/algorithms capable of providing intelligent solutions which are not feasible through normal human efforts. The machines/gadgets empowered with artificial intelligence through data science and machine learning algorithms has revolutionized the decision making abilities of not just business managers but every individual in this real world.

Program Curriculum and Structure

The curriculum of this certification program on Business Analytics is meticulously designed to enable a help the professional to learn and understand the data analytics methodologies analytical skills to handle big data by understanding, cleaning, structuring, building predictive models and finally providing an optimal solution to a strategic business issue of an organization. The detailed curriculum is given in the Annexure - I. The whole program is designed under FOUR fundamental skill/knowledge dissemination modes with classroom session on 15 Saturdays/Sundays during Feb-June 2019. 1. Class Room Teaching 2. Hands-on Sessions 3. Weekly Assignments and 4. Project Work/Dissertation. Datasets/Case Studies/Published Papers will be used for the Hands-on Sessions/assignments works. Statistical Software such as Minitab, R, Python and Statistica will be used during the program.

Who Can Attend

Working Professionals (Minimum Degree/Diploma Holders) with preferably 5 years of industrial experience. Preference will be given to those who are working in the areas of Data Sciences, Analytics, Quality etc. with adequate mathematics/Statistics background.

(Note : Registration will be primarily based on first come first served basis but Qualification, Experience and Suitability will also be considered)

Certification Criteria

- Minimum 75% attendance
- Minimum 70% Marks in the Overall Assessment. (The Overall Assessment consists of 1. Weekly Assignments 2. Periodical Examinations 3. Group Exercises/Presentations 4. Project/Decertation Work and 5. Final Examination (On 23rd June 2019).

(Note : Every participant need to take up a Project Work And/Or Dissertation and submit the reports for evaluation on or before 23rd June 2019)

Certificates will be awarded to the qualified candidates on 29th June 2019

(National Statistics Day celebrated on the birthday of Prof. P C Mahalanobis, Founder of Indian Statistical Institute)

Program Fee : Rs 60,000/- (per participant) (plus GST @ 18%). A pen-drive with Lecture Notes and Opensource data/books/published papers/software will be given as program kit. On the days of the program working lunch, Tea/Coffee with biscuits will be provided to the participants.

Payment Mode : Selected/eligible candidates need to pay the fee along with the applicable taxes in full at the beginning of the program (Part payment is not acceptable) in the form of **Demand Draft drawn in the favour of Indian Statistical Institute, Payable at Hyderabad or Online (NEFT) Bank Transfer (Syndicate Bank, J S N Colony, Habsiguda, Hyderabad. A/C No : 30451010000079 & IFSC Code : SYNB0003045)**

Venue : Lecture Hall, Indian Statistical Institute, Hyderabad

Timings : 0930 to 1730 hrs (Saturdays and/or Sundays)

Faculty : Senior Faculty with over 30 years of experience in Academic Teaching / Research / Industrial Consultancy / Training And Experienced Business Analytics Professionals/Data Scientists from Industry/Institutions.

Registration Procedure : Interested persons need to send the soft or hard copy of their filled Registration form along with the program fee to the Program Facilitator so as to reach on or before **18th February 2019**. After confirmation of registration, fee once paid will not be returned.

Note : Any changes/cancellation of the program offering will be at the discretion of the Institute and will be intimated accordingly.

1. Overview of Business Analytics

- What is Bigdata and Business Analytics
- Present day Business and need for Data Analytics
- Overview of Data Mining and Data Analytics Techniques
- Execution of Data Analytics - A Model : **DEMOP**

2. Basic Mathematics for Business Analytics

3. Business Analytics - I (Data Management)

- Understanding types of data
- Data Aggregation
- Data Scrutiny and Cleaning

4. Business Analytics - II (Descriptive Analytics)

- Statistical Thinking and its importance in Data Analytics
- Data visualization/Graphical Methods
- Descriptive Statistics and importance of summary measures
- Measures of central tendency and Dispersion
- Measures of Shape - Skewness and Kurtosis

5. Business Analytics - III (Data Characterization)

- Understanding Uncertainty
- Theory of Probability & Basic Rules
- Conditional Probability and Bayes' theorem
- Important Probability Distributions

6. Business Analytics - IV (Data Analysis and Exploration)

- Exploratory Data Analysis Techniques (EDA)
- Theory of Estimation and Sampling Distributions
- Decision Making - Inferential Statistics
- Hypothesis Testing (Parametric and Non Parametric)
- ANOVA and General Linear Model

7. Business Analytics - V (Unsupervised Learning)

- Feature or Variable Selection
- Need for Dimension Reduction Methods
- Principal Component, Discriminant, Factor & Cluster Analysis
- Market Basket Analysis /Customer Segmentation
- Text Mining
- Sentiment Analysis

8. Business Analytics -VI (Predictive Analytics)

- Introduction to Statistical Model Building
- Simple and Multiple Linear Regression models.
- Generalized Regression Models (Logistic, LDA, QDA etc.)
- Resampling Methods (Cross Validation, Bootstrap etc.)
- Regression Diagnostics
- Model Selection (Best Subset, Stepwise, Shrinkage etc.)
- Non Linear Regression Models (Splines, GAM etc.)
- Tree Based Methods (CART, Bagging, Boosting and Random Forest)
- Time series/Forecasting Models

9. Business Analytics - VII (Machine Learning & Artificial Intelligence)

- Overview of Artificial Intelligence, Machine Learning/Deep Learning etc.
- Support Vector Machines
- Artificial Neural Networks (ANN)
- Naïve Bayes Classifiers, KNN Methods
- Applications of AI & ML

10. Business Analytics - VIII (Optimization)

- Introduction Operations Research
- Industrial Problems and Optimal Decision Making
- Basic Optimization Models (LP/Transportation/Travelling Salesman etc.)
- Industrial Applications & Case Studies

Software to be used during the entire program : Excel/Tableau/Power BI//Minitab/R Programming/Statistica/Python etc.
(Note: The participants are expected to make special efforts on their own to develop their skills in these software during the program.)

About the Institute

The Indian Statistical Institute (I.S.I.), founded by Professor Prasanta Chandra Mahalanobis, grew out of the Statistical Laboratory set up by him in the Presidency College in Kolkata in the year 1931. In 1959, in recognition of the role of statistics as a key technology of the modern times and the importance of the Institute in the development and application of statistics, the Parliament of India enacted the Indian Statistical Institute Act, declaring it an Institution of National Importance. The Institute is now considered as one of the foremost centres in the world for training and research in statistics and related sciences. In keeping with this long tradition, the Institute has been engaged in developing statistical theory and methods and their practical applications in various branches of science and technology.

The major objectives of the Institute, as given in its Memorandum, are to promote the study and dissemination of knowledge of statistics, to develop statistical theory and methods, and their use in research and practical applications generally, with special reference to problems of planning of national development and social welfare;

to undertake research in various fields of natural and social sciences with a view to the mutual development of statistics and these sciences;

to provide for, and undertake, the collection of information, investigation, projects and operational research for purposes of planning and the improvement of efficiency of management and production.

The Institute initiated the Quality Movement in India as early as 1947. Through its SQC & OR Division the Institute is providing assistance to Indian industry relentlessly since then to achieve high quality and productivity at an affordable cost.

About the SQC & OR Unit, Hyderabad

The Statistical Quality Control and Operations Research (SQC & OR) Unit at Hyderabad of the Indian Statistical Institute was established in the year 1974 with the objective of helping industries in Andhra Pradesh and also industries of other states close to Hyderabad for promoting and propagating statistical and quality management methodologies.

The SQC & OR Unit, Hyderabad is one of the major Units of the SQC & OR Division of the Indian Statistical Institute. SQC & OR Division was created by Professor Mahalanobis exclusively for helping the Indian industries in managing quality and productivity problems with the application of Statistical as well as Quality Management methodologies.

SQC & OR Unit, Hyderabad has immensely contributed to the SQC & OR Division's activities such as

- Playing a pioneering role in the Quality Movement in India and setting path for quality control and improvement activities for the Indian industries through promotion and applications of statistical and operations research methodologies.
- Serving the industries in India and abroad over the last five decades by providing training and consultancy on quality concepts and methodologies such as TQM, Taguchi Methods, Quality Function Deployment, Six Sigma, and Quality Systems.
- Collaborating and exchanging ideas with quality gurus. Some experts like Shewhart, Deming, Juran, Taguchi, Ishikawa, Ott, Tippet and Suda visited ISI at various points of time and interacted with ISI faculty.

A large number of Manufacturing, Service, IT, BPO & KPO industries have been benefitted by the services of SQC & OR Unit Hyderabad. Reliance, ITC, Wipro, HSBC, BHEL Dr. Reddy's etc. to name a few.

Indian Statistical Institute

SQC & OR Unit, Hyderabad

Certification Program on

Business Analytics

February to June 2019, Starting on 23th February 2019 (Saturday)
(Weekend - Saturdays and/or Sundays)

Registration Form

Name :

Age :

Gender :

Organization :

Designation :

Years of Experience :

Domain Area/Skills (briefly describe) :

Highest Qualification :

Proficiency in Maths/Stats : Basic / Moderate / Fairly Good

Address :

Mobile No :

Email :

Details of Program Fee : Rs. 70800/- (Rs. 60,000/ + GST @ 18%)

Demand Draft / Online Payment (NEFT) No :

Name of the Bank :

Date :

(Last date for Registration: 18th February 2019)