

# Preface

I have contributed to data breach analysis projects using Six Sigma and analytics methodologies, trained under Professor Murali Rao Garimella at the Indian Statistical Institute Hyderabad.

Currently developing a guide on applying Six Sigma and Business Analytics for data-driven problem-solving.

This repository contains resources, code snippets, and case studies related to my research on Six Sigma and Business Analytics methodologies.

# Certificate



Figure 1: SSBB-BA-Certificate

Six Sigma Black Belt with Business Analytics Curriculum	
<p><b>Six Sigma DMAIC</b></p> <ul style="list-style-type: none"> <li>• An Introduction to Quality/Six Sigma / Business Excellence</li> <li>• Six Sigma Architecture and DMAIC Methodology</li> <li>• <b>Define Phase :</b> <ul style="list-style-type: none"> <li>• Voice of Customer (VOC), Kana Analysis &amp; QFD</li> <li>• Critical to Quality Characteristics (CTQ) and Big Y</li> <li>• Process Mapping (SIPOC) and Project Charter Development</li> </ul> </li> <li>• <b>Measure Phase :</b> <ul style="list-style-type: none"> <li>• Understanding Data and its precautions/processing</li> <li>• Descriptive Statistics, Probability &amp; Probability Distributions</li> <li>• Performance Evaluation - MSA, Stability &amp; Capability, Sigma Level etc</li> </ul> </li> <li>• <b>Analyze Phase :</b> <ul style="list-style-type: none"> <li>• Benchmarking and Gap Analysis</li> <li>• Detailed Process and Root Cause Analysis. Problem Solving Techniques</li> <li>• Root Causes Validations - Inferential Statistics</li> </ul> </li> <li>• <b>Improve Phase :</b> <ul style="list-style-type: none"> <li>• Establishing Variable (Root Cause) Relationships, Regression Modelling</li> <li>• Solution Generations – Desing of Experiments</li> <li>• Finding the optimal solution and validation</li> </ul> </li> <li>• <b>Control Phase :</b> <ul style="list-style-type: none"> <li>• Evaluation of the Improved Process</li> <li>• Developing Control Plans – Full Proof and Process Control Systems</li> <li>• Implementation of Controls and achieving Sustenance</li> </ul> </li> </ul>	<p><b>Business Analytics / Data Science</b></p> <ul style="list-style-type: none"> <li>• An Introduction to Business Analytics / Data Science / Machine Learning / Artificial Intelligence</li> <li>• An Introduction to open-source programming tools (Python/R Programming) for Analytics</li> <li>• Understanding multi-dimensional large volumes of data/big data.</li> <li>• Data Preparation / Data Cleaning Methodologies</li> <li>• Data Visualization – Understanding the underlying behaviour and interpretation through graphs and charts.</li> <li>• Exploration of data using statistical methods – Data Mining</li> <li>• Describing data and deriving meaningful information – Descriptive Analytics.</li> <li>• Postulating existing/new theories and validation for drawing significant inference on the theories.</li> <li>• Introduction to Machine Learning and Statistical Modelling</li> <li>• Supervised Learning Methods – Machine Learning Algorithms <ul style="list-style-type: none"> <li>• Understanding Classification and Regression Methods/Models</li> <li>• Ordinary Least Square (OLS) Methods/Models</li> <li>• Model Diagnostics, Feature Engineering, Resampling Methods etc.</li> <li>• Logistic, Discernment, KNN Methods/Models</li> <li>• Tree Based Methods/Models – Decision Trees</li> <li>• Ensembled Methods/Models – Random Forest, Bagging, Boosting.</li> <li>• Text Mining, NLP, Sentiment Analysis etc.</li> <li>• Association Rules and Market Basket Analysis.</li> <li>• Time Series &amp; Forecasting Models</li> </ul> </li> <li>• Unsupervised Learning Methods <ul style="list-style-type: none"> <li>• Clustering Methods</li> <li>• Principal Component Analysis</li> <li>• Discriminant Analysis</li> </ul> </li> <li>• Artificial Intelligence (introductory) <ul style="list-style-type: none"> <li>• Deep Learning Algorithms – Neural Networks etc.</li> <li>• Generative AI/LLM Algorithms.</li> </ul> </li> </ul>
<p><b>Program Design:</b> FOUR fundamental skill/knowledge dissemination modes. 1. Online Class Room Teaching 2. Online Hands-on Sessions 3. Assignments and 4. Project/Dissertation work. Datasets/Case Studies/Published Papers for Hands-on Sessions/assignments. Statistical Software/Tools : Minitab and Python.</p>	
<p><b>Schedule :</b> Total duration of the program : Approximately 70 hours spread over two months (March &amp; April 2024). Online during weekends (Saturdays &amp; Sundays 4 hours per day 9.00 AM to 1.00 PM).</p>	
<p><b>Certification Criteria</b></p> <ul style="list-style-type: none"> <li>• Fully attending all the sessions of the course online.</li> <li>• Submitting all the assignments on time</li> <li>• Submitting a Six Sigma/Business Analytics/Data Science Project/Dissertation work</li> <li>• Securing at least 70% Marks in the Overall Assessment (Periodic Evaluations/Assignments/Final Examination/Project/Dissertation work).</li> </ul>	

Figure 2: SSBB-BA-Syllabus

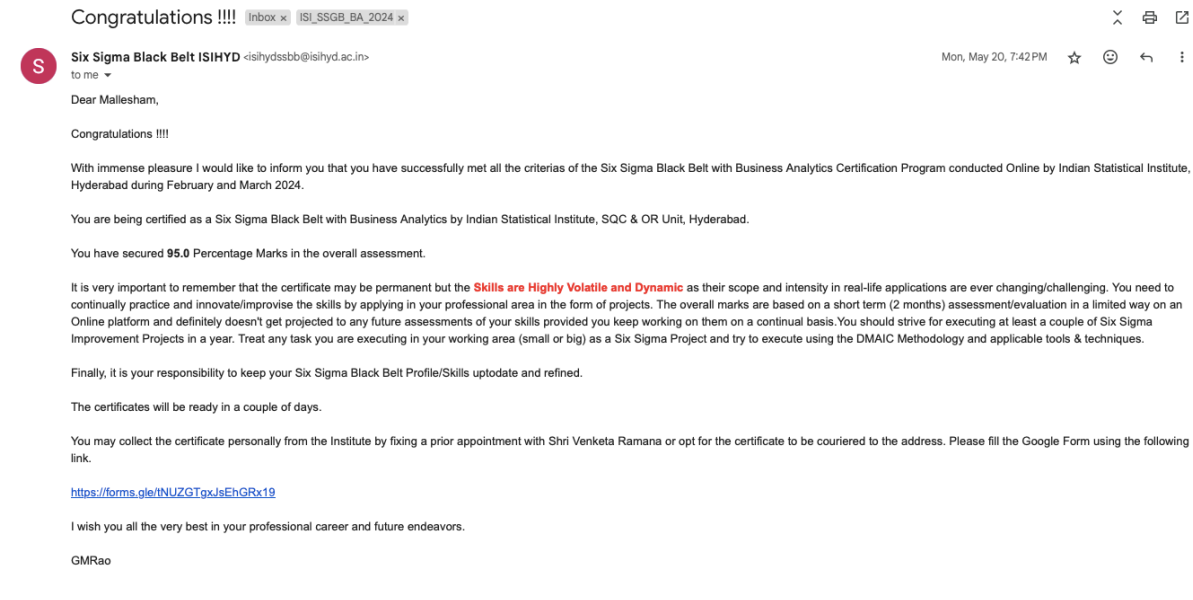


Figure 3: SSBB-BA-Result-Email