



भारतीय प्रबंध संस्थान अमृतसर  
Indian Institute of Management Amritsar



# POST GRADUATE CERTIFICATE PROGRAM IN DATA SCIENCE & BUSINESS ANALYTICS

July 2022 – June 2023

PROGRAM BROCHURE



## About the Program

*The goal is to turn data into information, and information into insight – Carly Fiorina*

Over the past two decades, analytics has rapidly evolved from a simple number crunching exercise to a competitive strategy that is driving innovations across organizations. The explosive growth in the use of analytical methods in the recent years has been fuelled by three major developments – technological advancements leading to a tumultuous surge in data generation at both individual and organizational levels, methodological developments resulting in more effective computational approaches and faster algorithms for handling and exploring massive amount of data, and finally, exponential progress in computing power and storage capabilities.

According to a study by MicroStrategy, companies worldwide are using data to boost process and cost efficiency, drive strategy and change, and monitor and improve financial performance. The study also shows that over the next few years, the investments in analytics are predicted to accelerate for 71% of the global enterprises. In light of such trends, skills related to data science, machine learning, artificial intelligence, big data and operations research have become indispensable for young graduates. However, as the requirement for skilled professionals in these fields soars, many companies continue to report the short supply of skilled employees. QuantHub has recently compiled data from major job services and reported a shortage of 250,000 in 2020 for skilled data scientists. Since the demand for data science and analyst roles is only projected to increase in the foreseeable future, the need for relevant upskilling and specialization has become more important now than ever before.

The Post Graduate Certificate Program in Data Science & Business Analytics (DSBA) from IIM Amritsar provides an avant-garde curriculum with special focus on the required tools and techniques to formulate, analyze and find solutions to the problems faced by the businesses in today's data driven world. This rigorous 12-months program is designed especially for young graduates with up to 2 years of work experience who aspire to develop analytical thinking and decision-making skills. The program will be delivered predominantly in the offline mode at the IIM Amritsar campus during which the participants will develop foundational to advanced understanding of these fields using in-demand tools and techniques, case studies, and capstone projects.

## About IIM Amritsar

Indian Institute of Management (IIM) Amritsar is the 15th IIM set up by the Ministry of Human Resource Development with the support of the Government of Punjab. Being located in Amritsar, the land of the Golden Temple and Wagah Border, the Institute benefits from the enriching experience offered by this holy city. The Institute is currently run in the Punjab Institute of Technology Building, 5 km away from the railway station and 10 km from the airport. Its permanent campus will be constructed about 7 km from the ISBT and 8.5 km from the railway station, making it easily accessible.

IIM Amritsar believes in collectively igniting possibilities. Towards fulfilling this objective, the institute plays a crucial role in human capital development by offering various programs like MBA, MBA Business Analytics, MBA HR, EMBA, PhD and various short – and long-term executive education programs. Owing to its indefatigable allegiance to providing exemplary education, IIM Amritsar has established itself as the vanguard of quality education and learning in a short span of time.

The Institute follows the same pedagogy as practiced by the other members of the prestigious IIM fraternity. With the state-of-the-art infrastructure, IIM Amritsar provides a nurturing environment for its students to learn and grow. IIM Amritsar also focuses on creating an entrepreneurial culture, where the students and faculty work together to create the best enterprising solutions. Besides getting to learn from qualified faculty and industry leaders, the students, here, learn by involving themselves in various club and committee activities. The tireless efforts of our students result in their winning many corporate and B-school competitions and, ultimately, their bagging promising career opportunities.

## KEY HIGHLIGHTS

- ◆ Program Completion Certificate from IIM Amritsar
- ◆ Physical classroom sessions at IIM Amritsar campus with flexibility for some online sessions whenever required by the institute
- ◆ Learn from world-class IIM Amritsar faculty along with timely supplements from industry professionals
- ◆ Hands-on training with in-demand tools such as Python, R, MySQL, Tableau, Power BI, and Spreadsheets
- ◆ 12-months rigorous program with case-based interactive sessions, assignments, periodic evaluations and practical projects



## PROGRAM CURRICULUM

Module	Key Exercises
Introduction to Data Science and Tools in Business	<ul style="list-style-type: none"> <li>◆ Visualizing Business Problems through Data</li> <li>◆ Exploring and Describing Datasets</li> <li>◆ Data Ethics and Security</li> <li>◆ Introduction to working with Python, R, MySQL, Tableau, Power BI, and Spreadsheets</li> </ul>
Descriptive Analytics	<ul style="list-style-type: none"> <li>◆ Data Visualization</li> <li>◆ Exploratory Data Analysis</li> <li>◆ Basic Statistical Measures</li> <li>◆ Probability and Random Variable</li> <li>◆ Discrete &amp; Continuous Distributions</li> <li>◆ Hypothesis Testing</li> <li>◆ Analysis of Variance</li> </ul>
Predictive Analytics and Forecasting	<ul style="list-style-type: none"> <li>◆ Linear Regression</li> <li>◆ Multivariate Regression Techniques</li> <li>◆ Logistic Regression</li> <li>◆ Time Series Regression Analysis</li> <li>◆ Panel Data Regression</li> </ul>
Artificial Intelligence, Machine Learning, and Deep Learning	<ul style="list-style-type: none"> <li>◆ Introduction to AI and ML</li> <li>◆ CART and Random Forest</li> <li>◆ Supervised &amp; Unsupervised Learning</li> <li>◆ Hierarchical and k-means Clustering</li> <li>◆ Deep Learning: Backpropagation</li> <li>◆ Neural Networks: RNN and CNN</li> </ul>
Big Data Analytics and Social Media Analytics	<ul style="list-style-type: none"> <li>◆ Natural Language Processing (NLP): Text, Web, Social</li> <li>◆ Data Scraping: Extracting Data from Twitter, Instagram</li> <li>◆ Data Storage: NoSQL and Hadoop Ecosystem</li> <li>◆ Data Processing: PIG, HIVE, Spark and In Memory Analytics</li> </ul>
Prescriptive Analytics	<ul style="list-style-type: none"> <li>◆ Optimizing Complex Decisions</li> <li>◆ Linear, Integer, Goal and Non-Linear Programming</li> <li>◆ Stochastic Programming</li> <li>◆ Decision Modelling using Spreadsheets</li> <li>◆ Sensitivity Analysis</li> <li>◆ Decision Making under Uncertainty and Risk</li> <li>◆ Simulation</li> </ul>
Application Module	<ul style="list-style-type: none"> <li>◆ Storytelling using Data</li> <li>◆ Operations and Supply Chain Analytics</li> <li>◆ Marketing Analytics and Digital Marketing</li> <li>◆ Retail Analytics</li> <li>◆ Financial Analytics</li> <li>◆ People Analytics</li> </ul>
<p><b>Capstone Projects:</b> Participants will be required to take up practical projects so as to gain a practical orientation of the analytical tools and techniques learnt during the Program. These projects would provide them an opportunity to integrate theoretical and practical aspects and help them develop actionable solutions leading to data science leadership skills. The final 3 weeks of the program will include project presentations and discussions by the participants.</p>	

## SELECTION PROCESS

- ◆ Applicants will be shortlisted based on their performance in DAT, consistent past academic performance, and progressive work experience (if any) credentials.
- ◆ DAT will comprise of multiple-choice questions (MCQs) that will focus on logical reasoning, data interpretation and basic mathematical concepts.
- ◆ Shortlisted candidates will be called for an online Personal Interview (PI). The interview panel will evaluate the suitability of the candidates for the program and their potential to excel in the field.

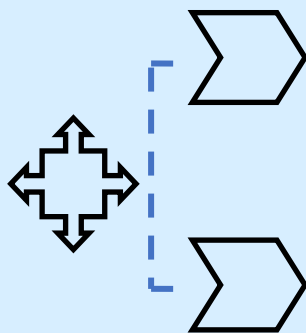
## PROGRAM COMPLETION REQUIREMENTS

- ◆ The course will have periodic evaluations.
- ◆ The evaluations will have both objective and subjective assessments in the form of assignments, quizzes, mini projects, and presentations.
- ◆ IIM Amritsar awards program completion certificates to the course participants who successfully complete all the academic requirements and adhere to IIM Amritsar's academic and non academic policy requirements.



## TARGET AUDIENCE

Data has rightly been called the new Oil. With the advent of technology driven business practices, individuals trained and upskilled in Data Science and Business Analytics are the most sought-after candidates for various job roles across industries.



Fresh graduates from any discipline having familiarity with high school mathematics and aspiring to build a career in data science, business analytics and related fields

Early career professionals with 0-2 years of work experience in any industry, having appreciation of high school mathematics and a keen interest towards enhancing their skills in data science and business analytics

## ELIGIBILITY CRITERIA

- ◆ Bachelor's degree in any discipline with minimum 55 percent marks, familiarity with high-school mathematics and strong oral and written communication skills
- ◆ Up to 2 years of work experience after completion of Graduation (Desired but not mandatory)
- ◆ Interested candidates must take the **DSBA Aptitude Test (DAT)** conducted by IIM Amritsar. The entrance exam will be conducted online on **April 17, 2022**
- ◆ Final selections will be based on a Personal Interview (PI) round of the candidates shortlisted after DAT

## SYSTEM REQUIREMENTS

- ◆ Processor: with Dual Core 2Ghz or higher (i3/ i5/ i7 or AMD equivalent)
- ◆ RAM: 4 GB or higher
- ◆ OS: Either MacOS 10.7 or higher OR Windows 8 or higher
- ◆ Browser: IE 11+, Edge 12+, Firefox 27+, Chrome 30+
- ◆ Speakers and microphone: built-in or a USB plug-in or wireless Bluetooth
- ◆ Webcam: built-in or USB plug-in
- ◆ Zoom software client installed on your PC/ Laptop/ Mac

## APPLICATION PROCESS

- ◆ The application form for admission to the 12-months DSBA program (July 2022 – June 2023) will be available at the institute's website.\*
- ◆ The deadline for submitting the completed application form is **March 15, 2022**.
- ◆ A non-refundable application fee of INR 1500/- has to be paid electronically at the time of submitting the application form.
- ◆ The applicants will subsequently take the DSBA Aptitude Test (DAT) conducted online by IIM Amritsar.



## IMPORTANT DATES\*\*

<b>Application Submission (Last Date)</b>	<b>March 15, 2022</b>
<b>DSBA Aptitude Test (DAT) Date</b>	<b>April 17, 2022</b>
<b>Online Interviews</b>	<b>May 09 - May 13, 2022</b>
<b>Admission Offers (Start Date)</b>	<b>May 20, 2022</b>
<b>Registration &amp; Orientation</b>	<b>July 04, 2022</b>
<b>Classes Start Date</b>	<b>July 05, 2022</b>
<b>Classes End Date</b>	<b>June 24, 2023</b>

\*\* Tentative and subject to change

## PROGRAM FEE

<b>Application Fee</b>	<b>INR 1,500/- + 18% GST</b>
<b>Programme Fee<sup>#</sup></b>	<b>INR 1,65,000/- + 18% GST</b>

## INSTALMENT SCHEDULE

<b>Offer Acceptance Amount<sup>##</sup> Within 7 days from the date of Offer</b>	<b>INR 10,000/- + 18% GST</b>
<b>Instalment 1: On or before June 15, 2022</b>	<b>INR 45,000/- + 18% GST</b>
<b>Instalment 2: On or before October 15, 2022</b>	<b>INR 55,000/- + 18% GST</b>
<b>Instalment 3: On or before February 15, 2023</b>	<b>INR 55,000/- + 18% GST</b>

<sup>#</sup>Fee includes tuition, books and study materials for the program.

<sup>#</sup>It does not include travel, food and accommodation during the program.

<sup>##</sup>Non-refundable and adjusted against Instalment 1.



## PROGRAM COORDINATORS



### Prof Shuvabrata Chakraborty

Quantitative Methods & Operations Management

Dr. Shuvabrata Chakraborty is associated with the Quantitative Methods and Operations Management area at the Indian Institute of Management Amritsar. He has completed his Ph.D. from the Indian Institute of Management Lucknow under the guidance of Prof. Yogesh K. Agarwal. His teaching interests include Operations Research, Operations Management, Business Analytics and Simulation.

Shuvabrata is a B.Tech. (Gold Medalist) in Mechanical Engineering from the National Institute of Technology Silchar and has worked as a piping engineer with the Engineers India Limited (EIL) for nearly five years before pursuing his PhD.

### Prof Ankit Sharma

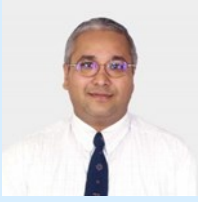
Quantitative Methods & Operations Management



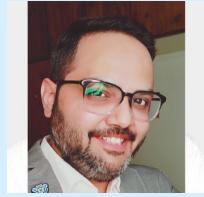
Dr. Ankit Sharma serves in the area of Quantitative Methods & Operations Management at Indian Institute of Management Amritsar. He has obtained his Ph.D. in Operations Management from Indian Institute of Management Lucknow. He is a Mechanical Engineer (Gold Medalist) from Institute of Engineering & Technology, Devi Ahilya Vishwavidhyalaya Indore.

He served as a Design Engineering at Jaguar Land Rover Offshore Dedicated Engineering Centre (JLR-ODEC), Pune. His teaching interests lie in Business Statistics, Operations Management, System Dynamics Modeling, Warehousing and Logistics Management, Discrete Optimization, Hub Location Problems, Supply Chain Management, Road and Air Transportation Systems.

## FACULTY



**Amit Gupta**  
PhD, University of  
Maryland



**Ankit Sharma**  
PhD, IIM Lucknow



**Arun Kaushik**  
PhD, IIT Roorkee



**Aswathy Asokan Ajitha**  
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**Chetan Chitre**  
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**Divya Tripathi**  
PhD, IIM Lucknow



**Gurbir Singh**  
PhD, IIM Indore



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**Mahima Gupta**  
PhD, IIM Lucknow



**Mukesh Kumar Jha**  
PhD, Jawaharlal  
Nehru University



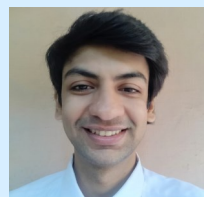
**Nabendu Paul**  
PhD, IIM Bangalore



**Pankaj Gupta**  
PhD, IIM Indore



**Pavneet Singh**  
PhD, IIM Ahmedabad



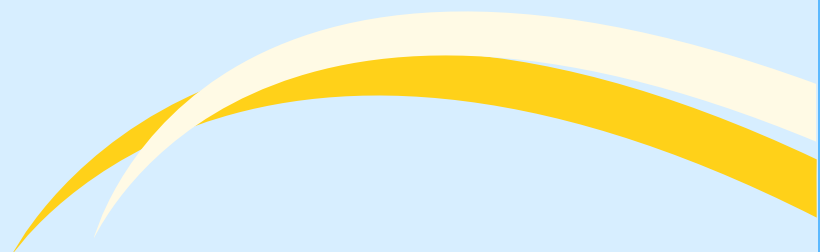
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**Prashanth V Anand**  
PhD, IIM Lucknow



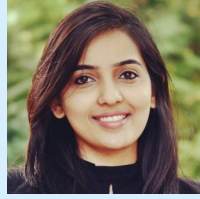
**Priyesh Valiya Purayil**  
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**Ranjan Kumar**  
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**Rashmi Kumari**  
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**Ravishankar V Kommu**  
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**Santosh Kumar Tiwari**  
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**Shuvabrata Chakraborty**  
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**Siddharth Gaurav Manjhi**  
PhD, IIM Ranchi



**Sujit Raghunathrao  
Jagadale**  
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Management Anand



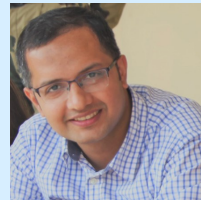
**Sunil Reddy Kunduru**  
PhD, IIM Bangalore



**Surender Rao Komera**  
PhD, IFMR



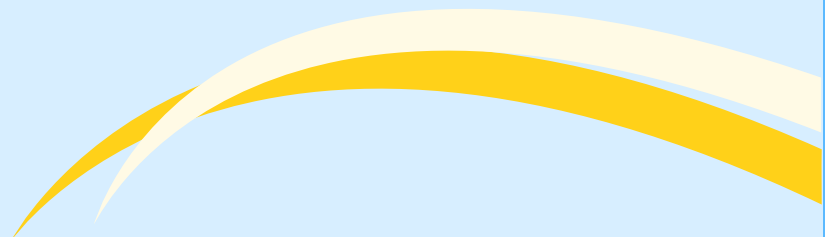
**Sweta Singh**  
PhD, IIM Bangalore



**Udayan Sharma**  
PhD, IIM Lucknow



**Vartika Dutta**  
PhD, IIT Kharagpur





## LIBRARY FACILITY

IIM Amritsar library is one of the finest and best in class management information centers in the country, complemented with state-of-art technology supports to the users. It is a cornerstone that supports learning, teaching, and research activities. With a variety of knowledge and information resources, facilities, and the latest information and communication technologies available in this library, it is our earnest endeavor to help you expand your knowledge, skills, and performance.



## CONTACT US

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