



# STAY AHEAD OF THE CURVE



Earn your spurs with  
IIT Kharagpur – Virginia Tech  
Joint Certificate Program in  
**Business Analytics and AI**

Batch 2 starts *September 2023*  
9 months, live online and in-class sessions

Jointly organized by

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR  
KHARAGPUR - 721302, WEST BENGAL, INDIA

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY  
BLACKSBURG, VA 24061, UNITED STATES

# Preparing you to be future ready

**"More than 86,000 open jobs worldwide are currently seeking data analytics skills, coupled with a massive shortage of data talent."**

Times of India, 2022

**"US Bureau of Labor Statistics projects a growth rate of nearly 28% in the number of jobs requiring data science skills by 2026."**

Forbes, 2022

**"...around three-quarters of companies are focused on automation, upskilling, and deploying advanced technologies such as AI."**

PwC's 26th Annual Global CEO Survey, 2023

Business analytics has been defined as the science of gaining insights from data to support intelligent decision-making. Many also see it as an efficient use of all information available to an organization to gain competitive advantage.

Powered by advanced technologies such as AI that help structure this complex data and make it intelligible, data analytics has become integral to business. It is helping organizations identify supply chain problems, gauge customer sentiment, take informed decisions and steer growth in the intended direction.

Data-driven decision-making, and emerging technologies such as AI and Machine Learning that back it, have become essential components of the workplace of today. Those waiting to make a foray into this fast-changing environment, or those who have already done so, need to gain necessary domain knowledge in their chosen fields, familiarize themselves with the new trends at work.

The IIT Kharagpur–Virginia Tech certificate program prepares young students and new learners for today's market that demands an understanding of AI and its applications in data analytics.

Most importantly, through its interdisciplinary approach and emphasis on innovation and entrepreneurship, the program helps learners to use their own ingenuity to confront challenges in their environs and beyond.

# About the program

The Joint Certificate Program in Business Analytics and Artificial Intelligence (AI) is a 9-month program, organized into multiple sequential units.

The last 3 months will be dedicated to a comprehensive capstone project under the guidance of IIT Kharagpur and Virginia Tech faculty.

## The program integrates four dimensions of the analytics world

I	II	III	IV
DATA	COMPUTATIONAL MODELS	TECHNOLOGY	APPLICATIONS

Through a series of modules organized along these dimensions, the coursework is intended to equip learners with a new set of skills and empower them to think differently. Each module will be led by a faculty member who is an expert in the field. Other experts from both the industry and academia will assist the lead faculty members as needed. The models proffered by AI and data science are robust and their applications challenging. Our faculty will prepare learners to apply these in different domains, including health sciences, business, and engineering. Upon completion of all requirements, students will obtain a certificate in Business Analytics and AI from IIT Kharagpur and Virginia Tech.

## Program Highlights

### PREPARES STUDENTS FOR A CAREER IN ANALYTICS AND AI

MODULAR AND COMPREHENSIVE COVERAGE OF TOPICS	COMBINATION OF THEORY, HANDS-ON PROJECTS, AND USE CASES FROM INDUSTRY	DURATION OF PROGRAM ENABLES IN-DEPTH LEARNING
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DURATION	STARTS FROM	ENDS ON	LEADS TO
9 MONTHS, INCLUDING 3-MONTH CAPSTONE PROJECT	OCTOBER 2023	JULY 2024	CERTIFICATE IN BUSINESS ANALYTICS AND AI FROM IIT KHARAGPUR AND VIRGINIA TECH (UPON COMPLETION OF ALL REQUIREMENTS)



## **Who can attend the program?**

The Joint Certificate Program in Business Analytics and AI is meant for both professionals who are looking to advance their careers as well as for young students who are yet to join the workplace. The program intends to motivate learners to pursue a career in data science and AI.

### **You can join the program if you have the following requisites**

- An undergraduate degree in engineering or science, such as computer science, information systems, statistics, mathematics or related areas with a minimum GPA of 7.0 or 65% marks
  - Work experience of 2-5 years
- Knowledge in computer programs supported by relevant documents
  - Willingness to learn

**Working professionals would be required to spend at least 6-8 hours per week on the course.**

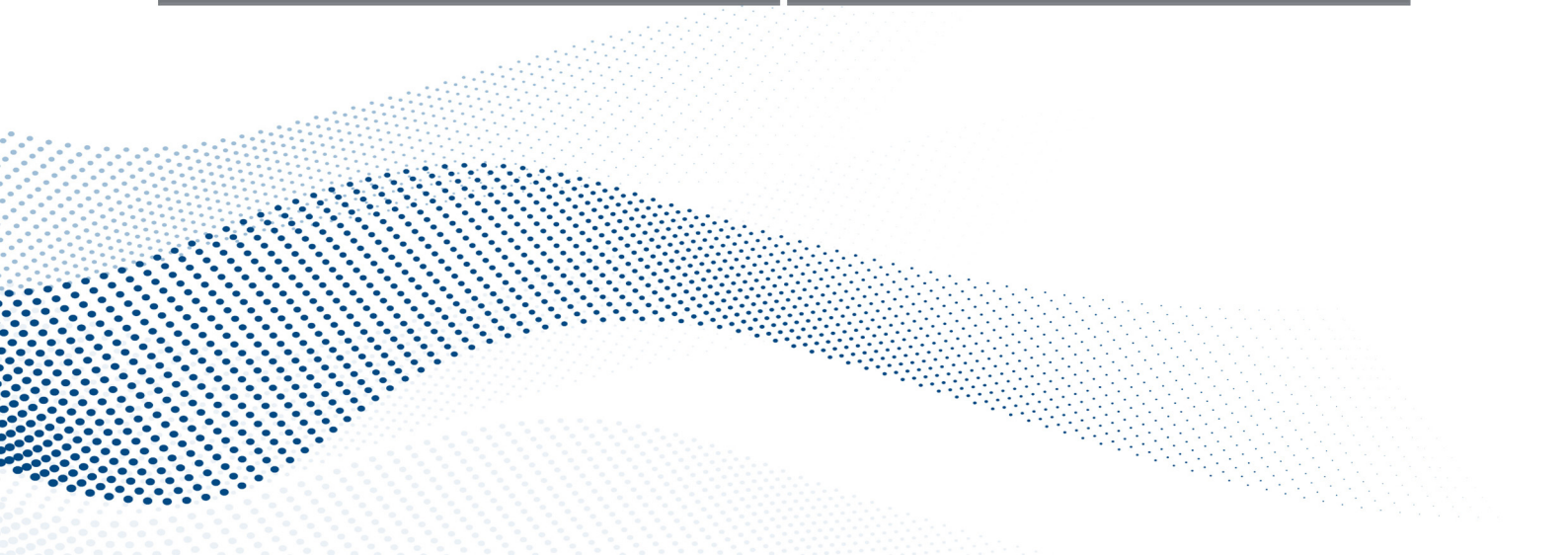


## Learn from the specialists

The Joint Certificate Program gives you the opportunity to learn from proven experts. The faculty teaching the course, having completed their doctoral and postdoctoral work from reputed universities, have distinguished themselves with their academic brilliance and groundbreaking research in information technology, analytics, AI, ML, Big Data and their applications. While they firm up the theoretical foundation for the learners, industry experts help apply these theories in practice. Additionally, graduate assistants from IIT Kharagpur will provide you guidance on assignments and projects.

## What will you gain ?

<b>LEARN FROM TWO GIANTS IN TECHNOLOGY EDUCATION</b>	<b>HIGH-IMPACT EXPERIENTIAL LEARNING UNDER TOP NATIONAL AND INTERNATIONAL FACULTY WITH PROVEN</b>
<b>HANDHOLDING AND INTERACTION WITH INDUSTRY EXPERTS</b>	<b>BECOME INDUSTRY-READY THROUGH REAL-TIME CASE STUDIES AND CAPSTONE PROJECT</b>
<b>OPPORTUNITY TO WORK WITH FACULTY AND COLLEAGUES ON RESEARCH AND INDUSTRY PROJECTS</b>	<b>LEARN DEMONSTRABLE SKILLS AND COMPETENCIES FOR IMMEDIATE JOB OPPORTUNITIES IN DATA SCIENCE AND ML APPLICATIONS AND/OR EARN THE ABILITY TO ELEVATE RESPONSIBILITIES WITH CURRENT EMPLOYER</b>
<b>LIFE-LONG AFFILIATION WITH VIRGINIA TECH AND IIT KHARAGPUR FOR ENHANCED CAREER GROWTH</b>	<b>JOINT CERTIFICATION THAT WILL SECURE YOUR Foothold IN THE GLOBAL WORKPLACE</b>





# Learning journey

Months	Topics
October 2023	Python NoSQL Python + NoSQL (with a hands-on assignment) Image and text data processing, setting the context by posing concrete questions (eg. object detection in images, video summarization, machine translation, generative AI)
November 2023	Basic statistics and data science Probability Random variables, Probability distribution, The Central Limit Theorem, Sampling and statistical inference, Confidence intervals, Hypothesis testing, regression analysis, data visualization and exploration, logistic regression
Required Project I (November 2023)	Analytics assignment using statistical methods
December 2023 - January 2024	Basics of ML - supervised vs unsupervised, with relevant algorithms (KNN, Decision Tree, Perceptron, SVM, KMeans, Hierarchical Clustering, PCA) with exercises on kaggle datasets
February-March 2024	Deep learning - MLP, CNN, autoencoder, RNN, LSTM, seq2seq with exercises on image and text datasets
Required Project II (February 2024)	Machine learning assignment with image and text data sets
Capstone Project (April 2024)	Groups formed and topics determined
April 2024	Scalable data mining
May 2024	Cloud technology
June 2024	Use cases - vision, NLP, finance, environment, manufacturing, Open AI -ChatGPT
Capstone Project (June 2024)	Capstone Project Report submission and presentation

## What will earn you the certification ?

You are expected to complete the following with minimum pass marks:

- Projects in databases, predictive analytics, ML, Big Data and other assignments
  - Capstone project and presentation



## Selection criteria

The admission committee will select applicants based on their academic background and work experience (2-5 years).

Preference will be given to the candidates who have completed a basic programming course [e.g. C/C++/Java] and have certificate equivalent to DOEACC A level or higher.

## Course fee

FOR INDIANS (INCLUDING OCI/PIO)

**INR 1,00,000 + GST (18%)**

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FOR FOREIGN NATIONALS

**USD 1500**

## Program application

Click the link to apply for the program with an application fee of INR 500 (USD 10 for foreign nationals). Applications are assessed on the basis of academic background and work experience. Application fees are non-refundable.

### Application Link

<https://erp.iitkgp.ac.in/CEP/courses.htm>





# About Indian Institute of Technology Kharagpur

Indian Institute of Technology Kharagpur is a higher educational institute known globally for its graduate output and affordable technology innovations. Set up in 1951 in a detention camp, Indian Institute of Technology Kharagpur (IIT Kharagpur) is the **mother of IITs** and was recognized as an Institute of Eminence by the Government of India in 2019. The key areas of research of IIT Kharagpur are Advanced Manufacturing Systems for Industry 4.0, Safety Engineering & Analytics, Quality and Reliability, Healthcare, Precision Agriculture & Food Nutrition, Smart Infrastructure and Advanced Transportation.

The Institute is engaged in several international and national mission projects and ranks significantly in research output, including 50-100 IPRs being filed annually and about 2,000 research publications in top journals and conferences. At present, the Institute has about 800 full-time equivalent faculty members, more than 16,000 students and over 75,000 alumni.

For more information, visit: <http://www.iitkgp.ac.in>





# About Virginia Tech

Dedicated to its motto, *Ut Prosim (That I May Serve)*, Virginia Tech pushes the boundaries of knowledge by taking a hands-on, transdisciplinary approach to preparing scholars to be leaders and problem-solvers. As the Commonwealth of Virginia's most comprehensive university and a leading research institution, Virginia Tech offers about 280 undergraduate and graduate degree programs to more than 37,000 undergraduate, graduate, and professional students across the Commonwealth and manages a research portfolio of more than USD 556 million. The university fulfills its role as a land-grant institution by fostering a collaborative environment that integrates technology into all disciplines, so that the Virginia Tech community can serve as a force for positive change around the Commonwealth, the country, and the world.

Virginia Tech has a 2,600-acre main campus in Blacksburg, Virginia; a significant presence across the Commonwealth, including the Innovation Campus in Northern Virginia, the Health Sciences and Technology Campus in Roanoke, and sites in Newport News and Richmond; educational and research facilities across the state; a study-abroad site in Switzerland; and a 1,800-acre agriculture research farm near the main campus. The campus proper is located in the New River Valley and is 38 miles southwest of Roanoke.

Virginia Tech has 2,070 instructional faculty members (both full and part-time) and 51 per cent of faculty are tenured. Virginia Tech is among 5 per cent of universities in the nation for research expenditures, 48th overall in the National Science Foundation's annual survey of higher-ed research expenditures and has 230 acres, 33 buildings, and 180 companies housed in the **Virginia Tech Corporate Research Center**.





# Program Coordinators

## **TARUN K. SEN**

Managing Director, Post Graduate Program in Business Analytics (PGPBA) and  
Professor Emeritus, Accounting and Information Systems, Virginia Tech, USA

## **ALI HABIBNIA**

Assistant Professor, Department of Economics, and Division of Computational Modeling & Data  
Analytics, Virginia Tech, USA

## **REZA BARKHI**

KPMG Professor, Department of Accounting and Information Systems,  
Pamplin College of Business, Virginia Tech, USA

## **ANIMESH MUKHERJEE**

Professor, Department of Computer Science and Engineering, Indian Institute of  
Technology Kharagpur

## **ADWAY MITRA**

Assistant Professor, Centre of Excellence in Artificial Intelligence (AI),  
Indian Institute of Technology Kharagpur

## **SOURANGSHU BHATTACHARYA**

Associate Professor, Department of Computer Science and Engineering, Indian  
Institute of Technology Kharagpur

## Save the following dates

Application portal opens on:

**AUGUST 01, 2023**

Deadline for closing of application portal:

**AUGUST 31, 2023**

Deadline for issuing admission offer letter to the selected candidates:

**SEPTEMBER 15, 2023**

Deadline for payment of course fee:

**SEPTEMBER 30, 2023**

Course duration:

**OCTOBER 07, 2023 - JULY 06, 2024**



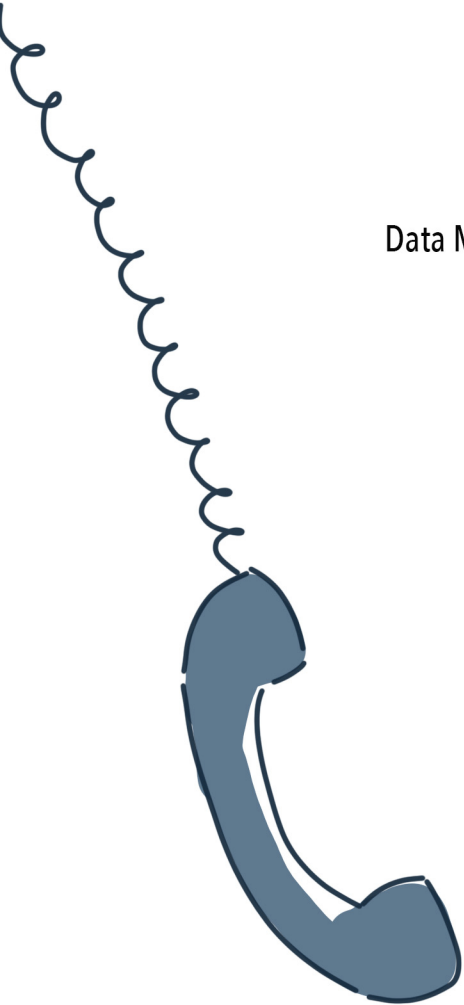


## CONTACT US

### **LYNDA KING**

Administrative and Program Coordinator, Newport News Center  
Outreach and International Affairs  
Virginia Tech, USA  
Email id - [lsweeney@vt.edu](mailto:lsweeney@vt.edu)  
Phone No. - 757-964-8855

### **RITUPARNA CHAKRABORTY**



Data Management Executive, Office of International Relations  
Indian Institute of Technology Kharagpur  
Email id - [rituparna@adm.iitkgp.ac.in](mailto:rituparna@adm.iitkgp.ac.in)  
Phone No. - +91-3222-281068