



STAY AHEAD OF THE CURVE



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

Batch 2 starts *October 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

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	
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 ?

LEARN FROM TWO GIANTS IN TECHNOLOGY EDUCATION	HIGH-IMPACT EXPERIENTIAL LEARNING UNDER TOP NATIONAL AND INTERNATIONAL FACULTY WITH PROVEN
HANDHOLDING AND INTERACTION WITH INDUSTRY EXPERTS	BECOME INDUSTRY-READY THROUGH REAL-TIME CASE STUDIES AND CAPSTONE PROJECT
OPPORTUNITY TO WORK WITH FACULTY AND COLLEAGUES ON RESEARCH AND INDUSTRY PROJECTS	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
LIFE-LONG AFFILIATION WITH VIRGINIA TECH AND IIT KHARAGPUR FOR ENHANCED CAREER GROWTH	JOINT CERTIFICATION THAT WILL SECURE YOUR Foothold IN THE GLOBAL WORKPLACE

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

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

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Associate Professor, Department of Computer Science and Engineering, Indian
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Save the following dates

Application portal opens on:

AUGUST 01, 2023

Deadline for closing of application portal:

SEPTEMBER 15, 2023

Deadline for issuing admission offer letter to the selected candidates:

SEPTEMBER 22, 2023

Deadline for payment of course fee:

SEPTEMBER 30, 2023

Course duration:

OCTOBER 07, 2023 - JULY 06, 2024

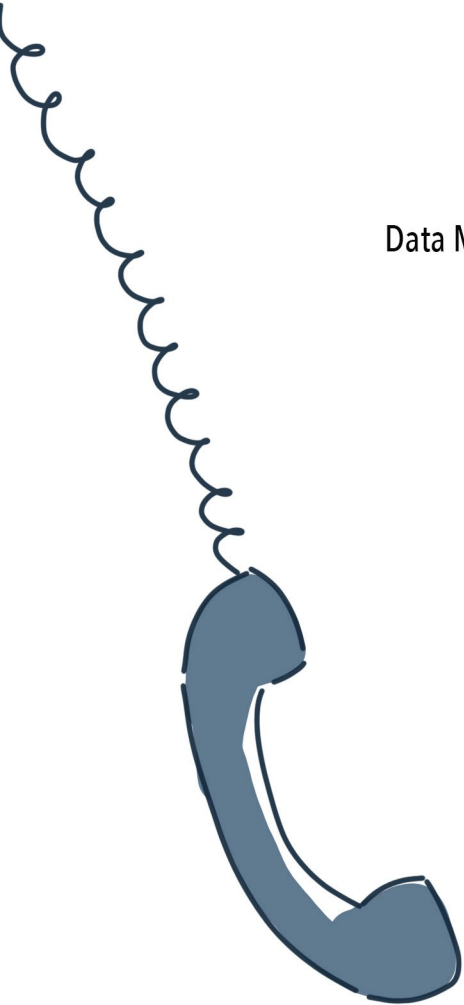


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