

upGrad



International  
Institute of Information  
Technology Bangalore

# ADVANCED CERTIFICATE PROGRAMME IN BIG DATA



# ABOUT UPGRAD



## Ronnie Screwvala

Co-founder & Executive  
Chairman

upGrad

**upGrad** is an online education provider that enables individuals to develop their professional potential in the most engaging learning environment. Online education is a fundamental disruption to the traditional model and will be having a far-reaching impact. At upGrad, we work towards transforming this online education wave into a tsunami! We take a full stack approach, by leveraging content, technology, marketing and services, to offer quality education at scale in partnership with corporates and academia. This translates into rigorous industry relevant programs for individuals looking for a professional upgrade.

In the last 10 years, digital technology has had a profound impact on billions of lives and thousands of businesses in India and abroad. The pace of growth is only expected to increase further, as the \$150 billion Indian IT the industry is set to double its revenue in the next 10 years. This growth will be driven by new age digital products and services, which will create millions of new developer jobs.

The program will prepare our learners to excel in this rapidly evolving technology landscape, by strengthening their core concepts.

“

**Our aim is simple: We strive to create high-impact, on-campus hands-on experiences that prepare students for meaningful and productive careers”.**

# Advanced Certificate Programme in Big Data with IIITB

As an independent institution and a deemed university, IIITB collaborates with the IT industry, leading academic institutions abroad, eminent scientists and industry leaders to offer students the best possible education. Our outstanding faculty, curriculum and pedagogy ensures that our graduate programs are ranked among the best in the country. Our students have been well received by industry, and have been placed with some of the leading companies in the IT industry.

We have partnered with upGrad to offer a rigorous program with a unique and exciting combination of development principles and industry-led hands-on experience. Learners will get opportunities to work on industry-relevant projects and interact with industry experts through upGrad's strong industry network. The program has been designed keeping in mind that the future belongs to the professionals who can think and implement end-to-end.



**Prof. Debabrata Das**  
Director - IIIT Bangalore



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# upGrad as a thought leader in emerging technologies

We have trained:

**10K+**

Data Scientists

**2K+**

Full Stack  
Developers

**5K+**

Machine Learning  
Engineers

**1.5K+**

Big Data Analysts

**1K+**

Blockchain Developers



# Program Highlights



## Advanced Certificate Programme from IIITB

Differentiate yourself from your peers by earning the industry recognised Advanced Certificate Programme from IIIT Bangalore.



## For the Industry, by the Industry

Learn and apply concepts on industry projects along with personalised industry mentorship.



## 360 Degree Career Assistance

Receive 360 degree career support from access to upGrad's job opportunities portal, 1:1 profile reviews, career mentorship from industry experts and much more.



## Personalised Mentorship

Get unparalleled personalised mentorship and doubt resolution from IIITB faculty and our panel of industry experts.



## Dedicated Student Support Team & upGrad Buddy

To help resolve your non-academic queries and to ensure you are on track with upcoming deadlines.



## Unparalleled Learning Experience

Learn the concepts from experienced IIITB faculty & understand the applications from Industry experts to get a blend of theoretical knowledge and practical-hands on experience.



# Learn from Academy & Industry Experts



**Chandrashekar Ramanathan**

Dean - Academics, IIITB



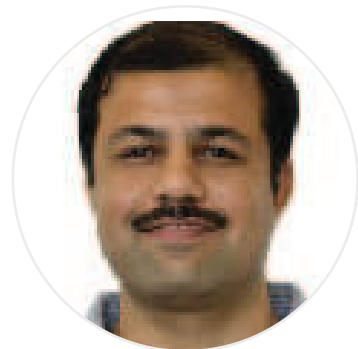
**Tricha Anjali**

Former Associate Dean, IIITB



**TK Srikant**

Faculty in charge, Computing, IIITB



**Sujit Kumar Chakrabarti**

Assistant Professor, IIITB



**Prof S. Balasubramaniam**

Ex-Dean Academics, BITS Pilani



**Prof. V. Sridhar**

Faculty In Charge, CPE, IIITB



**Cheng-Han Lee**

Ex-Program Manager, Microsoft



**Ashutosh Shinde**

Engineer Manager, Walmart



**Vishawanath Pattanshetti**

Sr System Analyst, IBM



**Varun Sehgal**

Director, freecharge



**Nitin Gaur**

Director- Blockchain Labs, IBM



**Prasanna Lohar**

Head-Technology & Innovation, DCB Bank



**Abhijeet Singh**

Sr Software Engineer, Microsoft



**Vishwa Mohan**

Senior Software Engineer, LinkedIn



**Hitesh Hasija**

Senior Data Engineer, Intuit



**Mayukh Chakraborty**

Software Engineer - 2, Microsoft



**Amit Ranjan**

Senior Data Engineer



**Kamlesh Gallani**

Strategy and Architecture Consultant



**Ashwin Sinha**

Engineer, Big Data

# upGrad Learning Experience



## Industry-relevant Curriculum

Designed and taught by best in class industry experts and IIIT Bangalore's faculty.



## Blended Learning

Learn with the ease and flexibility of recorded sessions as well as live sessions, designed to ensure a wholesome learning experience



## Discussion Forums

Learn from your peers and teaching assistants, and for timely doubt resolution.



## Career Assistance

Access to upGrad's job opportunities portal, career mentorship, profile review and more.



## Re-learn the Concepts

Get program access for upto 3 years to refresh your concepts



## Hands-On Projects

Multiple case studies & assignments & a mini capstone project to choose from and apply learnings to it.



# Industry Projects



## Spark Assignment

Design & Implement an ETL pipeline and create an ATM data mart for Bank to better manage its ATMs spread across the city.



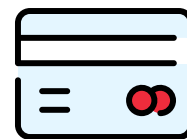
## ETL Data Pipeline

Design & Implement an ETL pipeline and create an ATM data mart for Bank to better manage its ATMs spread across the city.



## Stock Data Analysis

Develop a real-time data processing application to analyse stock data in real-time.



## Credit Card Fraud Detection

Develop an end-to-end big data solution for detecting credit card frauds in real-time.

# Curriculum

## PRE-REQUISITES

- **FUNDAMENTALS OF PROGRAMMING LANGUAGE WITH BASIC DATA STRUCTURES (JAVA)** 2 WEEKS

Learning the fundamentals of Java and its basic building blocks. Start with writing basic Java programs

**TOOLS COVERED: JAVA11, INTELLIJ**

## C1. BIG DATA FUNDAMENTALS AND PLATFORMS FOR BIG DATA

- **INTRODUCTION TO BIG DATA + AWS SETUP** 1 WEEK  
Learn what big data is, its various characteristics, and its determining factors. Understand what cloud and setup AWS account which will be required during the program
- **DIMENSIONAL & RELATIONAL DATA MODELLING** 2 WEEKS  
Learn and apply the approach to design dimensional and relational data models
- **DISTRIBUTED SYSTEMS AND PROGRAMMING MODEL** 1 WEEK  
Understand what a distributed system is and learn about the design complication of distributed systems
- **HADOOP AND MAPREDUCE PROGRAMMING** 1 WEEK  
Understand the world of distributed data processing and storage with Hadoop. Learn to write MapReduce jobs in Python
- **LARGE SCALE DATA PROCESSING WITH APACHE SPARK** 2 WEEKS  
Get introduced to Apache Spark, a lightning fast big data processing engine. Use Spark to create highly optimised large scale data processing applications
- **ASSIGNMENT/PROJECT** 1 WEEK  
Solve an assignment to brush up the skills learnt so far

## C2. BATCH PROCESSING

- **ETL AND DATA INGESTION- SQOOP AND FLUME** 1 WEEK  
Get familiar with the challenges involed in data ingestion. Use Sqoop and Flume to ingest structured and unstructured data into Hadoop
- **NOSQL DATABASES - HBASE** 1 WEEK  
Learn the concepts of NoSQL databases. Understand the working of Apache HBase
- **NOSQL DATABASES - MONGODB(OPTIONAL)**  
Get a hands-on understanding of the data model of MongoDB

- **HIVE & QUERYING** 1 WEEK  
Manage and query a data warehouse with Apache Hive. Learn to write optimised HQL for large scale data analysis
- **AMAZON REDSHIFT** 1 WEEK  
Learn to deploy a Redshift cluster and use it for querying data
- **ASSIGNMENT/PROJECT** 2 WEEKS  
Make use of Sqoop, Redshift & Spark to design an ETL data pipeline

Exam Week: Exam	1 WEEK
Buffer Week	1 WEEK

### C3. REAL TIME DATA PROCESSING

- **INTRODUCTION TO STREAMING ALGORITHMS** 1 WEEK  
Understand the various core techniques to process real-time streams of data
- **REAL-TIME DATA STREAMING WITH APACHE KAFKA** 1 WEEK  
Understand the producer-consumer architecture of Apache Kafka. Learn to set up a Kafka cluster for managing real-time data
- **REAL-TIME DATA PROCESSING WITH APACHE SPARK STREAMING** 2 WEEKS  
Learn about the real-time data processing architecture of Apache Spark. Build Spark Streaming applications to process data in real-time
- **APACHE FLINK (OPTIONAL)** 0 WEEK  
Get introduced to Apache Flink and learn query batch data. Use the DataStream API to create a stream processing application
- **BUILDING AUTOMATED DATA PIPELINES WITH APACHE AIRFLOW** 1 WEEK  
Learn to automate ETL data pipelines with Apache Airflow
- **DATA PLATFORM - UPSTAC** 1 WEEK  
An industry demo to design a big data platform for the 'UPSTAC' application
- **DESIGN & DEPLOYMENT - DATA PLATFORM** 1 WEEK  
An industry demo to design a big data platform for an application
- **ASSIGNMENT/PROJECT** 1 WEEK  
Build an end-to-end real-time data processing application using Spark Streaming and Kafka

Exam Week: Exam	1 WEEK
Buffer Week	1 WEEK

## C4. CAPSTONE

- **CAPSTONE PROJECT (GROUP)**

**4 WEEKS**

The capstone project will stitch all the components of big data engineering together

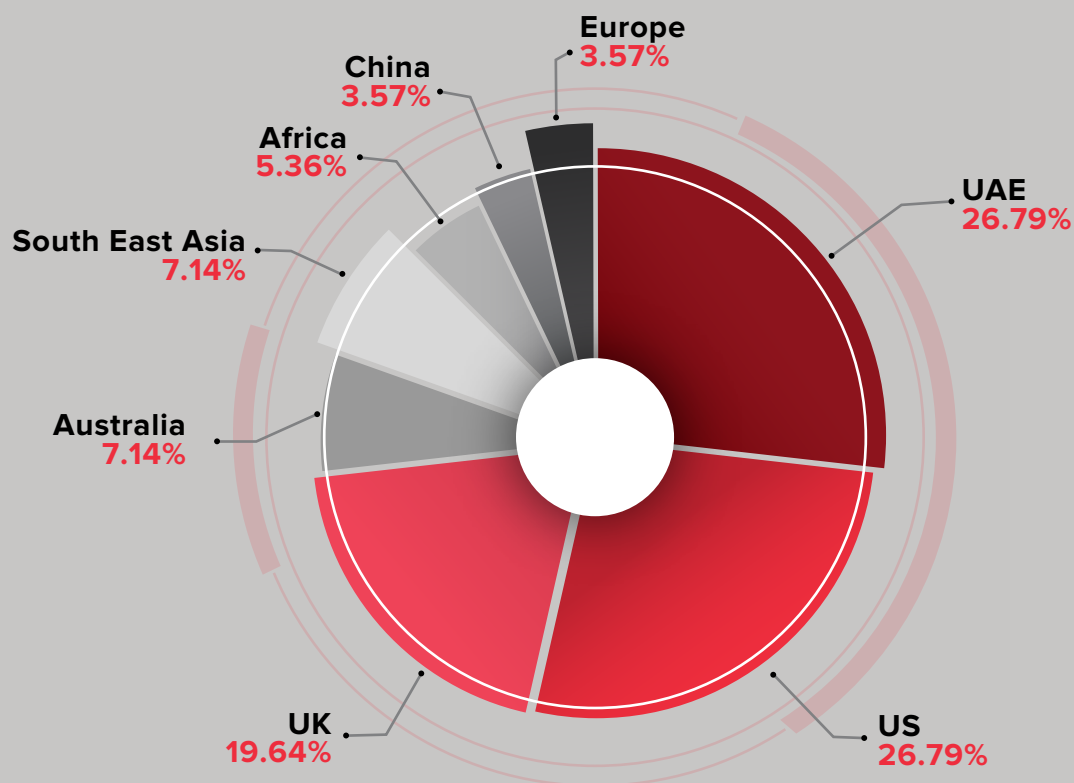
### TOOLS AND LIBRARIES

Java11, IntelliJ, Junit, Git and Github, Python, AWS EC2 + CDH, MySQL Workbench, CDH - HDFS, CDH - Apache Spark & AWS EMR, Hadoop, Apache Spark, Apache Sqoop and Apache Flume, Apache HBase, MongoDB, Apache Hive, Amazon Redshift, S3, Apache kafka, Apache Spark Structured Streaming, Apache Flink, Apache Airflow, Spark Streaming

# Meet the Class



## Opportunity to network with our international learners



# Hear from our learners



“ **Joel Varghese**  
Software Engineer,  
Zoreum Blockchain Labs

The program has been very useful and my experience with upGrad and the student mentors at upGrad has been very good. The content taught is very relatable and the method of delivery is also convenient for working professionals like us ”



“ **Kriti Jain**  
Software Engineer,  
Ministry of Defence

upGrad teaches complex topics in a very simple manner. The case studies are easily understandable and have added value to my resume and helped me bag a 125% salary hike. The curriculum is very relevant to today's market scenario and the upGrad team has done a good job in bringing education right at our palms ”



“ **Akshay Mathur**  
Software Technologist,  
Philips

“The program has taught me a lot and the case studies have been very useful. The student mentors are very helpful and have helped me solve any and every problem that I have faced. It has been a great experience for me, I would definitely recommend the program to my friends. ”



“ **Kumar Shubham**  
SDET - II,  
Blackbuck

“With upGrad, my experience has been wonderful. Managing work and studying has been the best decision of my life, thanks to upGrad. While it seemed difficult in the beginning, my student mentor helped me plan my schedule and manage time to maintain a work-life-study balance, which truly saved me! upGrad helped me gain a 60% salary hike ”

# Program Details & Admission Process

## PROGRAM DURATION AND FORMAT

7.5 months | Online

## PROGRAM FEE

INR 99,000 (Incl. of all taxes)

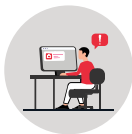
## PROGRAM START DATES

<https://www.upgrad.com/big-data-certification-pgc-iiitb>

## ELIGIBILITY

Bachelor's Degree with 50% or equivalent passing marks. No coding experience required.

## WEEKLY COMMITMENT (12-15 hours/week)



6-7 HOURS

Asynchronous learning time.



6-7 HOURS

Assignments and projects.

## SELECTION PROCESS



### STEP 1: Selection Test

Fill out an application and take a short 20-minute online test with questions



### STEP 2: Review and Shortlisting of Suitable Candidates

Our faculty will review all applications, consider the educational and professional background of an applicant and review the test scores wherever applicable. Following this, offer letters will be rolled out so you are assured a great peer group to learn and network with.



### STEP 3: Enrollment for Access to Prep Content

Make a quick block payment & receive immediate access to the prep content and begin your upGrad journey. (Loan assistance available if required)

## FOR FURTHER INFORMATION, CONTACT

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