



# Data Science

**6 Months Live Instructor-Led  
Certificate Programme**

**Corporate**



**Education  
Nest**

# Course Objectives

The data science industry is showing a rapid growth in how it affects every aspect of our lives. Whether it be in creating more innovative devices that make our lives easier every day or in solving global challenges such as poverty and hunger, data analytics has become an integral part of the way we interact with one another. It is, therefore, a no-brainer that now, more than ever, many aspire to enter the data science industry to become catalysts for a better world.

As one of the fastest-growing business fields, analysts have predicted around 11 million job openings in data science in India alone. Therefore, Sambodhi's Education Nest brings to you their 6-month Data Science Program, designed for professionals and recent graduates looking to enter this exciting and dynamic industry, armed with the skills they need to be successful!

The program offers an in-depth understanding of the most sought-after tools, techniques, frameworks, and algorithms in this industry and offers specializations like Big Data Engineering and Artificial & Deep Learning.



**Education Nest**

## About Education Nest

As a subsidiary of Sambodhi Research and Communications Pvt. Ltd., Education Nest is a global knowledge exchange platform that empowers learners with data-driven decision-making skills. It features online courses designed by experts to help you expand your skills and engage with a global network of learners through live training sessions, case-based learning, and interactions with the best from the field.



## About Sambodhi

Sambodhi Research has over 16 years of experience and the ability to create high-impact knowledge and accountability in the public domain through data science and evidence-based solutions. As an organization with the ability to field build and nurture outcomes-driven ecosystems, we relentlessly pursue our vision of empowering individuals with the best learning programs. Our focus is to enable each student to appear as an 'industry-ready' professional, equipped with the tools needed for a successful career in the Data Science industry.

# Key Highlights

Industry-relevant curriculum designed by industry experts

180 hours of instructor-led live virtual training on weekends

60 hours of Capstone project and exercises

1- year subscription to enterprise-grade Learning Management System (LMS)

Globally accredited recognition for students

Availability of scholarships and EMI payment options

## Program Curriculum

The course is divided into four phases that delve into various data science concepts, focusing on tools that enable a more efficient and effective understanding of data. These phases will include learning sessions, assessments, and extensive industry sessions.

## Program Benefits

- 1 Blended classroom learning with online sessions,
- 2 Mentoring sessions from experienced professionals,
- 3 Compact and industry-relevant course curriculum,
- 4 Globally accredited recognition for students of this course, and
- 5 Availability of scholarships and EMI payment options.

## Course Eligibility

All interested individuals with bachelor's degrees in any field are encouraged to apply.

Training Duration: 180 Days

Training Mode:

Interactive instructor-led live virtual classes, with live doubt-clearing sessions to aid maximum clarity and learning.

Students will also be provided with access to live class recordings and study material for self-study sessions.

# Phase Details

The curriculum is divided into four phases.

## Phase — 01

- Orientation to the industry landscape
- Building blocks for the course
- Data analytics and visualization using MS Excel and Tableau
- Introduction to Cloud Computing, SQL for Data Science

## Phase — 02

- Business Problem Solving: Predictive Modeling using Python
- Machine Learning using Python (Supervised and Forecasting Methods)
- Unsupervised learning using Python and MLOs (Clustering, PCA, and Recommendation System)

## Phase — 03

- Text Mining and NLP using Python
- Value Proposition of Analytics in distinct functions (Marketing, Risk Management, and Operations)
- AI & Deep Learning using Python- Computer Vision, Text Mining: Elective

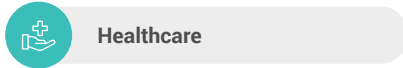
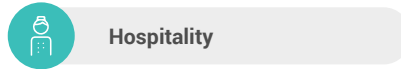
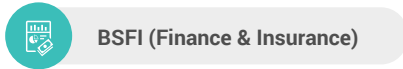
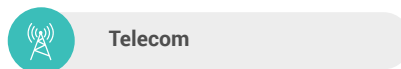
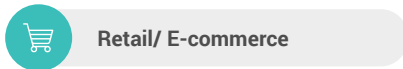
## Phase — 04

- Industry Capstone Project Work- Dissertation- Final VIVA
- Problem-solving (frameworks, approaches)
- Placement Preparation and Mock Interviews

## Projects

Assignments and case studies are curated using real data and problems, covering popular industries and domains to encourage maximum coverage based on different job profiles in Data Science.

# Key Industries Covered



# Key Skills Emphasized

- Data Handling, Manipulation, Preparation
- Data Analytics & Visualization
- Exploratory Data Analysis (Designing KPIs)
- Descriptive Analytics
- Diagnostics Analytics
- Predictive Modeling
- Statistical Analysis
- Machine Learning (supervised, unsupervised)
- Text Mining & Natural Language Processing
- Model Deployment
- Big Data Engineering
- End-to-End Data Pipeline Creation

# Training Methodology

## Instruction

Through the blended learning model, this program entails classroom tutorials and live interactive e-learning sessions to address as many questions as possible. All students will have access to a learning management system for 12 months, keeping in mind the constant upgrades made to the course according to industry standards.

## Why should you enroll?

If you're a data science enthusiast looking to begin or transition to a career in the field, Data Science Program is the perfect match! All you need is a bachelor's degree, and you will be provided with a course that includes the following:

- interactive live virtual sessions to learn from industry experts from anywhere,
- easy learning with an effective and efficient learning management portal,
- latest, industry-grade curriculum with meticulously designed project work, and
- extensive post-session support to cultivate real-world skills.

# Detailed Syllabus Overview



## Phase 1

### 1 Orientation to the industry landscape

This is an induction module wherein the student will be acquainted with the current market scenario and what it takes to make a mark in the data analytics domain.

Students will learn how analytics enables companies across the globe to understand customer trends and patterns and how it affects overall revenue. Research shows that 95% of companies consider managing unstructured data one of the biggest challenges. Thus, there are ample opportunities to fill that gap and become a data expert who understands how to manage data and derive insights from them.

This module will help students evaluate their skills and intent to become successful data scientists. The students will cultivate skills that allow them to:

- simplify complicated ideas and explain them to laypersons,
- inculcate curiosity about a business, understand market trends, and know how to hit the bull's eye with their research and solutions,
- be keen on working with AI and machine learning tools, and
- look at the bigger picture and understand the organization's architecture rather than just focusing on individual tasks.

Simultaneously, students will learn how data science has the power to mitigate risks and, when done incorrectly, can incur heavy losses. You will learn to adopt data science tools for various domains/fields.

This module will help students understand which type of analytical tool suits which type of industry, thereby addressing knowledge gaps about employment opportunities in Data Science.

### 2 Building Blocks (Basics of Mathematics & Statistics, Fundamentals of Programming)

Students will be introduced to the basics of statistics and understand how it helps diphas patterns through numbers. This module is essential to support candidates with no prior knowledge of statistics.

Simultaneously, for students with no background in programming, this module will help acquaint them with the basics of programming. It includes basics such as graphics, operating systems, logical functions, theoretical computer science, computer architecture, and algorithm design.

Lastly, this module will help students recapitulate the basics of calculus, linear algebra, and statistics.

### 3 Data Analytics and Visualization using EXCEL and Tableau

Students will learn how a data scientist can analyze consumer behavior based on the data at hand. Most companies use data analytics to find out more about user intent and send out tailor-made ads based on user data. In an age when personalization is the key to running a business, data analytics helps companies buy and keep new customers.

You will learn the following:

- Definition and use of data analytics
- Components of data analytics
- Types of data analysis— Qualitative and Quantitative

This module will teach students to play around with EXCEL and use it to its full potential for data storage, analysis, and visualization.

Along with this, students will learn how to visually represent data for people who are novices or non-technical.

You will learn the following:

- Types of visual representations
- Techniques for data visualization
- Data visualization using Tableau
- Data visualization using Google Data Studio
- Advantages and disadvantages of data visualization

### 4 RDBMS + ETL - SQL for Data Science - Introduction to Cloud Computing

In this module, students will learn Relational Database Management System [RDBM] and ETL [Extract, Transform and Load]- a program designed to create, update, and manage relational data. Students will learn how an ETL tool extracts data from different RDBMs, transforms it, and loads it to the data warehouse system. In most cases, this happens on an SQL interface which will be explained in this module.

Simultaneously, students will learn about Cloud Computing and its connection to RDBM.



### 1 Business Problem Solving: Predictive Modeling using Python

Using data to make accurate predictions is one of the core roles of a data expert. Using programming languages like Python, students will learn how to build a predictive model based on the organization's historical data and known results. These models have the power to predict future events accurately, helping businesses devise more data-oriented strategies within specific conditions. Students will learn to read data patterns and trends and use them to build predictive models.

## 2 Machine Learning using Python (Supervised and Forecasting Methods)

This module will train students to use machine learning in real-world scenarios. They will learn how machine learning is applied across various domains and industries and why Python libraries are the best for machine learning.

They will be familiarized with diverse types of machine learning, like supervised learning and algorithms, including time series forecasting, which helps improve forecasting accuracy while minimizing the loss function.

## 3 Unsupervised learning using Python and MLOps (Clustering, PCA, and Recommendation System)

In this module, students will learn about the following type of machine learning, i.e., unsupervised machine learning. They will be made to understand the concepts of clustering, Principal Component Analysis (PCA), and Recommendation Systems.

Throughout this module, students will understand how data interpretation is made, what methodologies are used to analyze data, and how AI is implemented to create a system that can make accurate product recommendations based on user search behavior or earlier browsing patterns.



## Phase 3

### 1 Text Mining and NLP using Python

This module will introduce students to the concepts of Natural Language Processing (NLP) and Text Mining using one of the most popular programming languages, Python. NLP and text mining are different concepts. NLP analyzes text, speech, or grammatical syntax to understand human language. Text mining, on the other hand, extracts information from structured and unstructured content. It focuses more on the content structure than meaning.

Students will learn machine learning algorithms used in text mining and NLP and techniques and methodologies to write their own data analysis algorithms using Python.

### 2 Value Proposition of Analytics in distinct functions (Marketing, Risk Management, and Operation)

This module will introduce students to various data analytics applications across distinct functions, like marketing, risk management, operations, etc.

- **Marketing:** Students will learn to evaluate marketing activities based on data and understand how businesses use analytical processes to evaluate customer-based data and design solutions accordingly. This module includes three major types of marketing analytics: descriptive, predictive, and prescriptive.
- **Risk Management:** Risk analytics is probably one of the most sought-after skills among companies looking for skilled data scientists. Students will learn how to measure, assess, and manage risk by analyzing available data and learn to analyze data and predict business risks with maximum accuracy. This module will train students to understand patterns in data and trends and do competitor analysis.
- **Operations:** Students will learn to make better business decisions with data, predict outcomes, and design models based on future demands and uncertainties.



### 3 AI & Deep Learning using Python - Computer Vision, Text Mining - Elective (Option I)

This elective module will give students more clarity on the core concepts and their differences. Students will understand how AI and Deep learning part and sub-part of Machine Learning are and how these concepts affect our daily lives on a micro and macro level.

You will learn about:

- Computer Vision
- Text Mining

### 3 Big Data Engineering using Hadoop Ecosystem & Spark/ PySpark - Elective (Option II)

This is the second possibility for choosing an elective specialization. Along with the data volume, data velocity has reached an all-time high. In this module, students will understand how big data refers to data that cannot be stored, processed, and analyzed using old-school methods. This module will cover frameworks like Hadoop, Cassandra, Apache Storm, and Spark and databases like NoSQL. Students will also learn how to manage all this data, analyze it, and derive meaningful.



## Phase 4

### 1 Industry Capstone Project work - Dissertation - Final Viva

Students will work under the guidance of their mentor/teacher to complete their dissertations, based on which they will be reviewed. An incomplete dissertation or incorrect project work will lead to failure in completing the program.

Students can opt for a more practical approach in the final phase through Capstone Project work. They will get a choice to choose from multiple project options:

- Sports event analysis and reporting
- Consumer electronics pricing data analysis & visualization
- Telecom churn prediction (Classification & Machine Learning)
- Predicting credit card spending (Regression Methods)
- Peer group lending analysis & prediction (Regression Methods)
- Marketing & sales data manipulation and analysis
- Airlines data analysis and reporting
- Sports equipment retail data analysis and visualization
- Peer group lending analysis & prediction (Regression Methods)

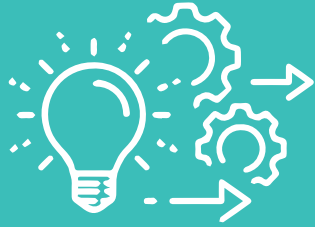
### 2 Problem-Solving (frameworks, approaches)

Students will learn problem-solving that allows them to break down and structure complex problems into small, logical steps or tasks.

### 3 Placement Preparation and Mock Interviews

Students will receive one-on-one counseling on career development, resume reviews, job applications, and interview preparations from mentors. Our placement support includes the following:

- Project portfolio
- Mock interviews
- Internships / Freelance projects
- Profile building
- Career guidance



## Tools & Skills



Python is an essential language in data science. Many data scientists use it to create analytical models and deploy them throughout their organizations. It is a valuable tool for data scientists because it is easy to understand and use. As a result, many universities have introduced Python as a core programming language in their computer science programs. Aspiring data scientists need to learn Python because it's one of the most popular languages in data science. Many businesses rely on Python-based analytical models to make critical business decisions. [\\_\\_\\_\\_\\_](#).

Excel is mainly used to store and analyze data. It's often the first-place data scientists turn to when trying to make sense of their data and conduct data analysis. This isn't surprising because Excel is easy to use and convenient. It also has various formulas, charts, and graphs that you can use to make sense of your data. Many businesses still use Excel to store and analyze their data and using Excel can put you ahead of the competition with an added advantage. [\\_\\_\\_\\_\\_](#).



The success story of Tableau is incredible, as it started as just a plug-in for MS Excel. However, it has developed into a separate tool that now sees widespread support and appreciation because of its superior business intelligence capabilities. Tableau is a highly compatible tool. It can get data from multiple sources ranging from the typical Excel, XML, and JSON to Databases such as SQL Server, Oracle Database to Azure, and other cloud-based sources. It can also connect to many online services, such as Facebook and Google Analytics, making it a highly versatile tool. [\\_\\_\\_\\_\\_](#).

SQL is another critical skill for a data scientist, regardless of the application. Whenever a data scientist works with a database, it's almost certain they'll use SQL. This is how data scientists access the data inside their databases. Therefore, a data scientist can't do their job without this skill. Most data scientists work with various databases – from SQL servers to Hadoop and NoSQL databases. And since most data scientists use SQL to access all their data, they must be fluent in it. [\\_\\_\\_\\_\\_](#).





Machine learning is everywhere and in everything. Businesses rely on machine learning to increase sales, lower costs, improve customer engagement, and design tailored advertisements. Machine learning is widely adopted in finance, healthcare, retail, and transportation. Even if a data scientist has the skills necessary to collect and clean data, without machine learning, they won't be able to create accurate models. Therefore, all data scientists need to understand machine learning techniques and concepts strongly. —••



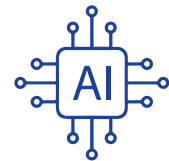
## Machine Learning



## Data Visualization

Data visualization is another critical skill for data scientists. When communicating data to others, a bar graph or pie chart is much easier to understand than a table full of numbers. Data visualization is essential with Big Data. It may be possible to store and process all the data you need, but if you can't make sense of it, there's no point in collecting it in the first place. With data visualization, you can transform copious amounts of data into a visual format that allows people to understand it more efficiently and make it more accessible. This is particularly important when it comes to data-driven decision-making. —••

As businesses continue investing in AI technologies, a new sub-discipline is a robotics. Robotics, in general, are used to control and automate physical devices, such as autonomous vehicles. In the field of data science, though, it's used to automate and manage analytical processes. For example, a data scientist might use robotics to create and deploy a model across a fleet of servers. This can help businesses scale their analytical processes to meet increased demand. For a lucrative career in data science, it's a clever idea to have a basic understanding of robotics and AI. After all, most businesses that use AI technologies are also investing in robotics to help scale these processes. Therefore, data scientists need at least a basic understanding of their technologies. —••



## Artificial Intelligence



## Data Analysis

Data analysis is reviewing data to find insights and draw conclusions. Even if they're not creating models, they must conduct data analysis as part of their daily processes. When performing data analysis, it is essential to identify patterns and trends in the data. This enables data scientists to draw meaningful conclusions about their data and communicate these results to others in the organization. —••

Data scientists need to understand how data is stored and processed from start to finish. This includes everything, from how data is collected and processed to how organizations store it. This is particularly important when businesses are shifting towards cloud storage. Data scientists must also have clarity on how their data is processed, including the tools and technologies used to process it. They can use this information to find ways to shorten their processing times and use their resources more efficiently. —••



## Data Storage and Processing



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