



**E&ICT Academy
IIT Kanpur**

A joint initiative of MeitY and IIT Kanpur

PROFESSIONAL CERTIFICATE COURSE IN **DATA ANALYTICS**

Table of Contents

About the Program	03
Key Features of the Program	04
About E&ICT Academy, IIT Kanpur	05
Eligibility Criteria	06
Application Process	06
Who is This Program Ideal For?	08
Program Outcomes	09
Learning Path	11
Tools Covered	23
Projects	24
Certificate	26
Program Advisors	27



About the Program

Data analytics is a broad term that encompasses many diverse types of data analysis. Any type of information can be subjected to data analytics techniques to gain insights into how to make improvements. Data analytics techniques can reveal trends and metrics that would otherwise be lost in the mass of information. This information can then be used to optimize processes to increase the overall efficiency of a business or system.

Demystify data and strengthen your analytical skills through this program, delivered through live sessions by industry experts, hands-on labs, industry-relevant projects, and masterclasses from distinguished IIT Kanpur faculty. This program features the perfect mix of theory, use-cases, and extensive hands-on practice to help you master data analytics concepts and tools, and is carefully designed to help you demystify data analytics and equip you with the required skills to advance your career.





Key Features of the Program



Program completion certificate
from E&ICT Academy,
IIT Kanpur



Masterclasses delivered by
distinguished IIT Kanpur
faculty



12+ hands-on projects aligned
to various industry verticals



14+ practical tools and
frameworks to bring positive
impact to your work



Capstone projects in 3
domains



Seamless access
to integrated labs



Simplilearn's Career
Assistance helps you
get noticed by top hiring
companies



8X higher interaction in live
online classes by industry
experts



About E&ICT Academy, IIT Kanpur

Established in 1959, IIT Kanpur is among the most prestigious institutes in India. It has consistently ranked in the top five engineering institutes in India over the past several decades, and many of the institute's alumni are leaders in academia and industry around the globe. IIT Kanpur offers courses in sciences, engineering, humanities, and management.

Electronics & ICT Academy (E&ICT Academy) at IIT Kanpur was established in 2016 in partnership with the Ministry of Electronics and Information Technology (MeitY), Government of India. It is mandated to provide industry-focused and industry-driven hands-on courses in Electronics & ICT. It strives to narrow the gap between the academic approach to Electronics & ICT domains as currently provided by educational institutes and the practically-oriented approach as demanded by the industry.

E&ICT Academy, IIT Kanpur has collaborated with Simplilearn to deliver this program. Simplilearn's award-winning immersive learning model delivered via live virtual classes focuses on applied learning to create immediate career impact.



Program Eligibility Criteria and Application Process

Eligibility Criteria

- ✓ A bachelor's degree with an average of 50 percent or higher marks
- ✓ Prior work experience is not mandatory
- ✓ Can be from programming or non-programming background

Application Process

Candidates can apply for this program in 3 simple steps:





Talk to an Admissions Counselor

We have a team of dedicated admissions counselors to help guide you in the application process and related matters. They are available to:

- ✓ Address questions related to the application
- ✓ Help you better understand the program and answer your questions





Who is This Program Ideal For?

This course caters to graduates in any discipline and working professionals from programming as well as non-programming backgrounds. Learners from any educational background with an analytical frame of mind can pursue this program, including:

- ✓ IT professionals
- ✓ Banking and finance professionals
- ✓ Marketing managers
- ✓ Supply chain network managers
- ✓ Engineers
- ✓ Analysts
- ✓ Consultants
- ✓ Domain experts



Program Outcomes

- ✓ Understand the essential statistical and SQL concepts
- ✓ Write your first Python program by implementing concepts of variables, strings, functions, loops, and conditional statements
- ✓ Understand the nuances of lists, sets, dictionaries, conditions, branching, objects, and classes in Python
- ✓ Work with data in Python, including the reading and writing of files and loading, working, and saving data with Pandas
- ✓ Perform data analytics using popular Python libraries
- ✓ Learn how to interpret data in Python using multi-dimensional arrays in NumPy, manipulate DataFrames in Pandas, use the SciPy library of mathematical routines, and execute machine learning using Scikit-Learn
- ✓ Gain insights on several data visualization libraries in Python, including Matplotlib, Seaborn, and Folium
- ✓ Gain an in-depth understanding of the basics of R, learning how to write your own R scripts
- ✓ Master R programming and understand how various statements are executed in R
- ✓ Get introduced to the latest Microsoft analytics and visualization tools (Power BI)



- ✓ Grasp the concepts of Tableau, become proficient with Tableau statistics, and build interactive dashboards
- ✓ Become an expert on visualization techniques such as heat map, treemap, waterfall, Pareto, Gantt chart, and market basket analysis



Learning Path



Electives

- ✓ Data Visualization Using Power BI
- ✓ Data Analytics Masterclass



Business Analytics with Excel

Make the business analytics strong with the basics of statistics fundamentals, and techniques as the first step in the Data Analytics post graduate program

Key Learning Objectives

- ✓ Understand the meaning of business analytics and its importance in the industry
- ✓ Grasp the fundamentals of Excel analytics functions and conditional formatting
- ✓ Learn how to analyze complex data sets using pivot tables and slicers
- ✓ Apply statistical tools and concepts such as moving averages, hypothesis testing, ANOVA, and regression to data sets using Excel
- ✓ Represent your findings using charts and dashboards

Course Curriculum

- ✓ **Lesson 1-** Introduction to Business Analytics
- ✓ **Lesson 2-** Conditional Formatting and Important Functions
- ✓ **Lesson 3-** Analyzing Data with Pivot Tables
- ✓ **Lesson 4-** Dashboarding
- ✓ **Lesson 5-** Business Analytics with Excel
- ✓ **Lesson 6-** Data Analysis Using Statistics
- ✓ **Lesson 7-** Power BI



SQL

This course gives you the information you need to successfully start working with SQL databases and make use of the database in your applications. Learn the concepts of fundamental SQL statements, conditional statements, commands, joins, subqueries, and various functions to manage your SQL database for scalable growth.

Key Learning Objectives

- ✓ Understand databases and relationships
- ✓ Use common query tools and work with SQL commands
- ✓ Understand transactions, creating tables, and views
- ✓ Comprehend and execute stored procedures

Course Curriculum

- ✓ **Lesson 1** - Fundamental SQL Statements
- ✓ **Lesson 2** - Restore and Back-up
- ✓ **Lesson 3** - Selection Commands: Filtering
- ✓ **Lesson 4** - Selection Commands: Ordering
- ✓ **Lesson 5** - Alias
- ✓ **Lesson 6** - Aggregate Commands
- ✓ **Lesson 7** - Group By Commands
- ✓ **Lesson 8** - Conditional Statement
- ✓ **Lesson 9** - Joins
- ✓ **Lesson 10** - Subqueries



- ✓ **Lesson 11** - Views and Index
- ✓ **Lesson 12** - String Functions
- ✓ **Lesson 13** - Mathematical Functions
- ✓ **Lesson 14** - Date and Time Functions
- ✓ **Lesson 15** - Pattern (String) Matching
- ✓ **Lesson 16** - User Access Control Functions



Programming Foundation and Data Analytics with Python

With this Programming Foundation and Data Analytics course, you will learn programming fundamentals, how to analyze data in Python, perform simple statistical analyses, create meaningful data visualizations, predict future trends from data, and more.

Key Learning Objectives

Gain knowledge in the basics of programming, Python fundamentals, Jupyter and Python environment setup, and OOPs concepts. Get a solid understanding of different programming languages, algorithms, and pseudo code.

- ✓ Import data sets
- ✓ Clean and prepare data for analysis
- ✓ Manipulate Pandas DataFrame
- ✓ Summarize data
- ✓ Build data pipelines
- ✓ Build machine learning models using scikit-learn

Course Curriculum

- ✓ **Lesson 1** - Introduction to Programming
- ✓ **Lesson 2** - Programming Environment Setup
- ✓ **Lesson 3** - OOPs Concepts
- ✓ **Lesson 4** - Programming Fundamentals of Python
- ✓ **Lesson 5** - File Handling, Exception Handling, and Package Handling
- ✓ **Lesson 6** - Course Introduction



- ✓ **Lesson 7** - Data Analytics Overview
- ✓ **Lesson 8** - Statistical Computing
- ✓ **Lesson 9** - Mathematical Computing Using NumPy
- ✓ **Lesson 10** - Data Manipulation with Pandas
- ✓ **Lesson 11** - Data Visualization with Python
- ✓ **Lesson 12** - Intro to Model Building



Data Analytics with R

The next step to becoming a data scientist is learning R, the most in-demand open source technology. R, a powerful data science and analytics language, has a steep learning curve and a very vibrant community. This is why it is quickly becoming the technology of choice for organizations that are adopting the power of analytics for competitive advantage.

Key Learning Objectives

- ✓ Gain a foundational understanding of business analytics
- ✓ Install R, RStudio, and workspace setup, and learn about the various R packages
- ✓ Master R programming and understand how various statements are executed in R
- ✓ Gain an in-depth understanding of data structures used in R and learn how to import/export data in RDefine
- ✓ Understand and use the various apply functions and DPLYR functions
- ✓ Understand and use the various graphics in R for data visualization
- ✓ Gain a basic understanding of various statistical concepts
- ✓ Understand and use the hypothesis testing method to drive business decisions
- ✓ Understand and use both linear and non-linear regression models and classification techniques for data analysis
- ✓ Learn and use the various association rules and Apriori algorithm
- ✓ Learn and use clustering methods including K-means, DBSCAN, and hierarchical clustering



Course Curriculum

- ✓ **Lesson 1** - Introduction to Business Analytics
- ✓ **Lesson 2** - Introduction to R Programming
- ✓ **Lesson 3** - Data Structures
- ✓ **Lesson 4** - Data Visualization
- ✓ **Lesson 5** - Statistics for Data Science I
- ✓ **Lesson 6** - Statistics for Data Science II
- ✓ **Lesson 7** - Regression Analysis
- ✓ **Lesson 8** - Classification
- ✓ **Lesson 9** - Clustering
- ✓ **Lesson 10** - Association



Tableau Training

This Tableau course helps you understand how to build visualizations, organize data, and design charts and dashboards to empower more meaningful business decisions. You'll be exposed to the concepts of Data Visualization, different combo charts and stories; working with filters, parameters, and sets; and building interactive dashboards.

Key Learning Objectives

- ✓ Become an expert on visualization techniques such as heat map, treemap, waterfall, Pareto
- ✓ Understand metadata and its usage
- ✓ Work with filters, parameters, and sets
- ✓ Master special field types and Tableau-generated fields and the process of creating and using parameters
- ✓ Learn how to build charts, interactive dashboards, story interfaces, and how to share your work
- ✓ Master the concepts of data blending, create data extracts, and organize and format data
- ✓ Master arithmetic, logical, table, and LOD calculations



Course curriculum

- ✓ **Lesson 01** - Getting Started with Tableau
- ✓ **Lesson 02** - Core Tableau in Topics
- ✓ **Lesson 03** - Creating Charts in Tableau
- ✓ **Lesson 04** - Working with Metadata
- ✓ **Lesson 05** - Filters in Tableau
- ✓ **Lesson 06** - Applying Analytics to the Worksheet
- ✓ **Lesson 07** - Dashboards in Tableau
- ✓ **Lesson 08** - Modifications to Data Connections
- ✓ **Lesson 09** - Introduction to Level of Details in Tableau (LODS)



Data Analytics Capstone

This data analytics capstone project will give you an opportunity to implement the skills you learned throughout this program. Through dedicated mentoring sessions, you'll solve a real-world, industry-aligned data problem, from data processing and model building to reporting your business results and insights. This project is the final step in the learning path and will enable you to showcase your expertise in data analytics to future employers. This capstone project will bring you through the methodologies of data preprocessing, exploratory data analysis, and data storytelling by creating dashboards to drive business decisions. You can choose to work on projects that cover the most relevant industries (consumer services, BFSI, and healthcare) to make your practice more relevant.



Electives

Data Visualization Using Power BI

Explore Power BI concepts like layouts, BI reports, dashboards, Power BI DAX commands, and functions. Learning how to experiment, fix, prepare, and present data quickly is easy with this in-depth course.

Data Analytics Academic Masterclass from IIT Kanpur

Attend online, interactive masterclasses conducted by the renowned instructors from IIT Kanpur. Understand what analytics can and cannot do, how to interpret data to make better decisions, and different data analytics techniques.



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TOOLS COVERED





Projects

Rating prediction for apps on Google Play store

Make a model to predict the app rating, with other information about the app provided to boost its visibility.



Google Play

Demand forecast for Walmart

Predict store sales and demand, factoring in economic conditions for the retail giant Walmart's stores across the United States.



Attrition modeling for IBM

Help the US-based multinational corporation IBM identify the factors that influence the attrition of their employees across the enterprise.





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Exploratory data analysis and visualization for Zomato

Determine the key metrics to identify the star restaurants

zomato



Certificate

Upon successful completion of this program, you will receive a certificate of completion from E&ICT Academy, IIT Kanpur. This certificate will testify to your skills as a Data Analytics expert.



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IIT Kanpur

Program Advisors



Prof. Amey Karkare

Poonam and Prabhu Goel Chair Professor

Department of Computer Science and
Engineering, IIT Kanpur

Why wait?

Take the first step towards your Data Analytics journey by applying below.

[Apply Now](#)

