



Data Analytics with PowerBI Training Curriculum

STRUCTURE



Data Analytics with PowerBI Training

About Croma Campus:

Croma Campus Training & Development Private Limited is an education platform since 2010 providing rigorous industry-relevant programs designed and delivered in collaboration with world-class faculty and industry.

- Hands-On Live Projects
- Industry Cases Studies
- 61,640+ Satisfied Learners
- 140+ Training Courses
- 100% Certification Passing Rate
- Live Instructor Classroom / Online Training
- 100% Placement Assistance

Course Objectives:

- Install, configure, and secure your Jenkins server
- Organize and monitor general-purpose build jobs
- Integrate automated tests to verify the build
- Set up code quality reporting
- Establish effective team notification strategies and techniques
- Configure build pipelines, parameterized jobs, matrix builds, and other advanced jobs
- Implement automated deployment and continuous delivery

Croma Campus Training Program Deliverables:

- **Session Recordings** - Original Class Room Voice & Video Recording
- **Training Material** - Soft Copy Handbooks
- **Assignments** | Multiple Hands-on Exercises
- **Test Papers** - We provide **Practice Test** as part of our course to help you prepare for the actual certification exam.
- **Live Case Studies**
- **Live Projects** - Hands-on exercises and Project work. You will work on real time industry-oriented projects and assignments for each module to practice.
- **Key focus on Hands-on exercises and Project work.** You will work on real time industry-oriented projects.
- Faculty with more than **10+ Years of Experience** in the Industry.
- **Technical Resume Designing & Job Assistance:** With more than 100+ Clients across the Globe and we help learners to get a good job in their respective field. We also help learners with resume preparation.
- **Interview Q&A**
- **About Croma Campus Training Certificate:** Croma Campus will provide you with an industry-recognized (Certified by **ISO 9001:2015 & E-Cell IIT Jodhpur**) course completion certificate, which has lifelong validity.

How I unlock my Croma Campus Certificate: Attend Complete Batch & Submit at least One Completed Project.

Data Analytics with PowerBI Program Modules:

- Python for Data Analytics
- Data Analytics Overview
- MS SQL For Data Analytics
- Advance Excel for Data Analytics
- PowerBI for Data Analytics
- Data Analytics Live Projects



The banner features the Croma Learning Campus logo and the text "#1 Asia's Technical Training Institute" in the top left. In the top right is a small icon of two people. The central text reads "Masters in DATA ANALYTICS" with "DATA ANALYTICS" in orange. Below this is a quote: "Without Data Analytics, companies are blind and deaf, wandering out onto the web like deer on freeway." To the right of the text is an illustration of two white humanoid figures standing on a glowing blue circular base, interacting with a large, transparent, cylindrical data structure that contains bar charts and line graphs. At the bottom of the banner is a grid of nine white boxes, each containing a logo and the name of a technology or tool.

	NUMPY		PYTHON		SCIPY
	POWER BI		EXCEL		MATPLOTLIB
	PANDAS		SEABORN		SQL

Course Content for Data Analytics with PowerBI:

Module 1: Python Statistics for Data Science

- **Introduction To Python:**
 - Installation and Working with Python
 - Understanding Python variables
 - Python basic Operators
 - Understanding the Python blocks.
- **Introduction To Variables:**
 - Variables, expression condition and function
 - Global and Local Variables in Python
 - Packing and Unpacking Arguments
 - Type Casting in Python
 - Byte objects vs. string in Python
 - Variable Scope
- **Python Data Type:**
 - Declaring and using Numeric data types
 - Using string data type and string operations
 - Understanding Non-numeric data types
 - Understanding the concept of Casting and Boolean.
 - Strings
 - List
 - Tuples
 - Dictionary
 - Sets
- **Introduction Keywords and Identifiers and Operators**
 - Python Keyword and Identifiers
 - Python Comments, Multiline Comments.
 - Python Indentation
 - Understating the concepts of Operators

Data Structure

- **List**
 - What is List.
 - List Creation
 - List Length
 - List Append
 - List Insert
 - List Remove
 - List Append & Extend using “+” and Keyword
 - List Delete
 - List related Keyword in Python
 - List Revers
 - List Sorting

- List having Multiple Reference
- String Split to create a List
- List Indexing
- List Slicing
- List count and Looping
- List Comprehension and Nested Comprehension
- **Dictionary**
 - Dict Creation
 - Dict Access (Accessing Dict Values)
 - Dict Get Method
 - Dict Add or Modify Elements
 - Dict Copy
 - Dict From Keys.
 - Dict Items
 - Dict Keys (Updating, Removing and Iterating)
 - Dict Values
 - Dict Comprehension
 - Default Dictionaries
 - Ordered Dictionaries
 - Looping Dictionaries
 - Dict useful methods (Pop, Pop Item, Str , Update etc.)

Sets, Tuples and Looping Programming

- **Sets**
 - What is Set
 - Set Creation
 - Add element to a Set
 - Remove elements from a Set
 - PythonSet Operations
 - Frozen Sets
- **Tuple**
 - What is Tuple
 - Tuple Creation
 - Accessing Elements in Tuple
 - Changinga Tuple
 - TupleDeletion
 - Tuple Count
 - Tuple Index
 - TupleMembership
 - TupleBuilt in Function (Length, Sort)
- **Control Flow**
 - Loops
 - Loops and Control Statements (Continue, Break and Pass).
 - Looping techniques in Python
 - How to use Range function in Loop?
 - Programs for printing Patterns in Python

- How to use if and else with Loop
- Use of Switch Function in Loop
- Elegant way of Python Iteration
- Generator in Python
- How to use nested IF and Else in Python
- How to use nested Loop in Python
- Use If and Else in for and While Loop
- Examples of Looping with Break and Continue Statements
- How to use IN or NOT keyword in Python Loop.

Exception and File Handling, Module, Function and Packages

- **Python Exception Handling**
 - Python Errors and Built-in-Exceptions
 - Exception handling Try, Except and Finally
 - Catching Exceptions in Python
 - Catching Specific Exception in Python
 - Raising Exception
 - Try and Finally
- **Python File Handling**
 - Opening a File
 - Python File Modes
 - Closing File
 - Writing to a File
 - Reading from a File
 - Renaming and Deleting Files in Python
 - Python Directory and File Management
 - List Directories and Files
 - Making New Directory
 - Changing Directory
- **Python Function, Modules and Packages**
 - Python Syntax
 - Function Call
 - Return Statement
 - Write an Empty Function in Python –pass statement.
 - Lambda/ Anonymous Function
 - *args and **kwargs
 - Help function in Python
 - Scope and Life Time of Variable in Python Function
 - Nested Loop in Python Function
 - Recursive Function and Its Advantage and Disadvantage
 - Organizing python codes using functions
 - Organizing python projects into modules
 - Importing own module as well as external modules
 - Understanding Packages
 - Programming using functions, modules & external packages

- Map, Filter and Reduce function with Lambda Function
- More example of Python Function

Data Automation (Excel, SQL, PDF etc)

- **Python Object Oriented Programming—Oops**

- Concept of Class, Object and Instances
- Constructor, Class attributes and Destructors
- Real time use of class in live projects
- Inheritance, Overlapping and Overloading operators
- Adding and retrieving dynamic attributes of classes
- Programming using Oops support

- **Python Database Interaction**

- SQL Database connection using
- Creating and searching tables
- Reading and Storing configuration information on database
- Programming using database connections

- **Reading an excel**

- Reading an excel file using Python
- Writing to an excel sheet using Python
- Python | Reading an excel file
- Python | Writing an excel file
- Adjusting Rows and Column using Python
- Arithmetic Operation in Excel file.
- Plotting Pie Charts
- Plotting Area Charts
- Plotting Bar or Column Charts using Python.
- Plotting Doughnut Charts using Python.
- Consolidation of Excel File using Python
- Split of Excel File Using Python.
- Play with Workbook, Sheets and Cells in Excel using Python
- Creating and Removing Sheets
- Formatting the Excel File Data
- More example of Python Function

- **Working with PDF and MS Word using Python**

- Extracting Text from PDFs
- Creating PDFs
- Copy Pages
- Split PDF
- Combining pages from many PDFs
- Rotating PDF's Pages

- **Complete Understanding of OS Module of Python**

- Check Dirs. (exist or not)
- How to split path and extension?
- How to get user profile detail?
- Get the path of Desktop, Documents, Downloads etc.

- Handle the File System Organization using OS
- How to get any files and folder's details using OS?

Data Analysis & Visualization

• Pandas

- Read data from Excel File using Pandas More Plotting, Date Time Indexing and writing to files
- How to get record specific records Using Pandas Adding & Resetting Columns, Mapping with function
- Using the Excel File class to read multiple sheets More Mapping, Filling Nonvalue's
- Exploring the Data Plotting, Correlations, and Histograms
- Getting statistical information about the data Analysis Concepts, Handle the None Values
- Reading files with no header and skipping records Cumulative Sums and Value Counts, Ranking etc
- Reading a subset of columns Data Maintenance, Adding/Removing Cols and Rows
- Applying formulas on the columns Basic Grouping, Concepts of Aggregate Function
- Complete Understanding of Pivot Table Data Slicing using iLoc and Loc property (Setting Indices)
- Understanding the Properties of Pivot Table in Pandas Advanced Reading CSVs/HTML, Binning, Categorical Data
- Exporting the results to Excel Joins:
- Python | Pandas Data Frame Inner Join
- Understanding the properties of Data Frame Left Join (Left Outer Join)
- Indexing and Selecting Data with Pandas Right Join (Right Outer Join)
- Pandas | Merging, Joining and Concatenating Full Join (Full Outer Join)
- Pandas | Find Missing Data and Fill and Drop NA Appending DataFrame and Data
- Pandas | How to Group Data How to apply Lambda / Function on Data Frame
- Other Very Useful concepts of Pandas in Python Data Time Property in Pandas (More and More)

• NumPy

- Introduction to NumPy: Numerical Python
- Importing NumPy and Its Properties
- NumPy Arrays
- Creating an Array from a CSV
- Operations on Array from a CSV
- Operations with NumPy Arrays
- Two-Dimensional Array
- Selecting Elements from 1-D Array
- Selecting Elements from 2-D Array
- Logical Operation with Arrays
- Indexing NumPy elements using conditionals
- NumPy's Mean and Axis

- NumPy's Mode, Median and Sum Function
- NumPy's Sort Function and More
- **Matplotlib**
 - Bar Chart using Python Matplotlib
 - Column Chart using Python Matplotlib
 - Pie Chart using Python Matplotlib
 - Area Chart using Python Matplotlib
 - Scatter Plot Chart using Python Matplotlib
 - Play with Charts Properties Using Matplotlib
 - Export the Chart as Image
 - Understanding plt. subplots () notation
 - Legend Alignment of Chart using Matplotlib
 - Create Charts as Image
 - Other Useful Properties of Charts.
 - Complete Understanding of Histograms
 - Plotting Different Charts, Labels, and Labels Alignment etc.
- **Introduction to Seaborn**
 - Introduction to Seaborn
 - Making a scatter plot with lists
 - Making a count plot with a list
 - Using Pandas with seaborn
 - Tidy vs Untidy data
 - Making a count plot with a Dataframe
 - Adding a third variable with hue
 - Hue and scatter plots
 - Hue and count plots
- **Visualizing Two Quantitative Variables**
 - Introduction to relational plots and subplots
 - Creating subplots with col and row
 - Customizing scatter plots
 - Changing the size of scatter plot points
 - Changing the style of scatter plot points
 - Introduction to line plots
 - Interpreting line plots
 - Visualizing standard deviation with line plots
 - Plotting subgroups in line plots
- **Visualizing a Categorical and a Quantitative Variable**
 - Current plots and bar plots
 - Count plots
 - Bar plot with percentages
 - Customizing bar plots
 - Box plots
 - Create and interpret a box plot
 - Omitting outliers
 - Adjusting the whiskers
 - Point plots

- Customizing points plots
- Point plot with subgroups
- **Customizing Seaborn Plots**
 - Changing plot style and colour
 - Changing style and palette
 - Changing the scale
 - Using a custom palette
 - Adding titles and labels: Part 1
 - Face Grids vs. Axes Subplots
 - Adding a title to a face Grid object
 - Adding title and labels: Part 2
 - Adding a title and axis labels
 - Rotating x-ticks labels
 - Putting it all together
 - Box plot with subgroups
 - Bar plot with subgroups and subplots

Module 2 : Data Analytics Overview

- **Data Analytics Overview**
 - Dealing with Different Types of Data
 - Data Visualization for Decision making
 - Data Science, Data Analytics, and Machine Learning
 - Data Science Methodology
 - Data Analytics in Different Sectors
 - Analytics Framework and Latest trends

Module 3 : MS SQL For Data Analytics

- **Introduction**
 - Overview of Oracle Database 11g and related products
 - Overview of relational database management concepts and terminologies
 - Introduction to SQL and its development environments
 - The HR schema and the tables used in this course
 - Oracle Database documentation and additional resources
- **Retrieve Data using the SQL SELECT Statement**
 - List the capabilities of SQL SELECT statements
 - Generate a report of data from the output of a basic SELECT statement
 - Use arithmetic expressions and NULL values in the SELECT statement
 - Invoke Column aliases
 - Concatenation operator, literal character strings, alternative quote operator, and the DISTINCT keyword

- Display the table structure using the DESCRIBE command
- **Usage of Single-Row Functions to Customize Output**
 - List the differences between single row and multiple row functions
 - Manipulate strings using character functions
 - Manipulate numbers with the ROUND, TRUNC, and MOD functions
 - Perform arithmetic with date data
 - Manipulate dates with the DATE functions
- **Conversion Functions and Conditional Expressions**
 - Describe implicit and explicit data type conversion
 - Describe the TO_CHAR, TO_NUMBER, and TO_DATE conversion functions
 - Nesting multiple functions
 - Apply the NVL, NULLIF, and COALESCE functions to data
 - Usage of conditional IF THEN ELSE logic in a SELECT statement
- **Aggregated Data Using the Group Functions**
 - Usage of the aggregation functions in SELECT statements to produce meaningful reports
 - Describe the AVG, SUM, MIN, and MAX function
 - How to handle Null Values in a group function?
 - Divide the data in groups by using the GROUP BY clause
 - Exclude groups of data by using the HAVING clause
- **Display Data from Multiple Tables**
 - Write SELECT statements to access data from more than one table
 - Join Tables Using SQL:1999 Syntax
 - View data that does not meet a join condition by using outer joins
 - Join a table to itself by using a self join
 - Create Cross Joins
- **Usage of Sub-queries to Solve Queries**
 - Use a Sub-query to Solve a Problem
 - Single-Row Sub-queries
 - Group Functions in a Sub-query
 - Multiple-Row Sub-queries
 - Use the ANY and ALL Operator in Multiple-Row Sub-queries
 - Use the EXISTS Operator
- **SET Operators**
 - Describe the SET operators
 - Use a SET operator to combine multiple queries into a single query
 - Describe the UNION, UNION ALL, INTERSECT, and MINUS Operators
 - Use the ORDER BY Clause in Set Operations
- **Data Manipulation**
 - Add New Rows to a Table
 - Change the Data in a Table
 - Use the DELETE and TRUNCATE Statements
 - How to save and discard changes with the COMMIT and ROLLBACK statements
 - Implement Read Consistency
 - Describe the FOR UPDATE Clause

Module 4 : Advance Excel for Analytics

- **Ms Excel Basic**

- Creation of Excel Sheet Data
- Range Name, Format Painter
- Conditional Formatting, Wrap Text, Merge & Centre
- Sort, Filter, Advance Filter
- Different type of Chart Creations
- Auditing, (Trace Precedents, Trace Dependents)Print Area
- Data Validations, Consolidate, Subtotal
- What if Analysis (Data Table, Goal Seek, Scenario)
- Solver, Freeze Panes
- Various Simple Functions in Excel(Sum, Average, Max, Min)
- Real Life Assignment work

- **Ms Excel Advance**

- Advance Data Sorting
- Multi-level sorting
- Restoring data to original order after performing sorting
- Sort by icons
- Sort by colours
- Lookup Functions
 - Lookup
 - VLookup
 - HLookup
- Subtotal, Multi-Level Subtotal
- Grouping Features
 - Column Wise
 - Row Wise
- Consolidation With Several Worksheets
- Filter
 - Auto Filter
 - Advance Filter
- Printing of Row & Column Heading on Each Page
- Workbook Protection and Worksheet Protection
- Specified Range Protection in Worksheet
- Excel Data Analysis
 - Goal Seek
 - Scenario Manager
- Data Table
 - Advance use of Data Tables in Excel
 - Reporting and Information Representation
- Pivot Table
 - Pivot Chart
 - Slicer with Pivot Table & Chart

- Generating MIS Report In Excel
 - Advance Functions of Excel
 - Math & Trig Functions
 - Text Functions
 - Lookup & Reference Function
 - Logical Functions & Date and Time Functions
 - Database Functions
 - Statistical Functions
 - Financial Functions
 - Functions for Calculation Depreciation
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- **MIS Reporting & Dash Board**
 - Dashboard Background
 - Dashboard Elements
 - Interactive Dashboards
 - Type of Reporting In India
 - Reporting Analyst
 - Indian Print Media Reporting
 - Audit Report
 - Accounting MIS Reports
 - HR Mis Reports
 - MIS Report Preparation Supplier, Exporter
 - Data Analysis
 - Costing Budgeting Mis Reporting
 - MIS Report For Manufacturing Company
 - MIS Reporting For Store And Billing
 - Product Performance Report
 - Member Performance Report
 - Customer-Wise Sales Report
 - Collections Report
 - Channel Stock Report
 - Prospect Analysis Report
 - Calling Reports
 - Expenses Report
 - Stock Controller MIS Reporting
 - Inventory Statement
 - Payroll Report
 - Salary Slip
 - Loan Assumption Sheet
 - Invoice Creation

Module 5 : Power BI for Data Analytics.

- **Introduction to Power BI**
 - Overview of BI concepts
 - Why we need BI?
 - Introduction to SSBI
 - SSBI Tools
 - Why Power BI?
 - What is Power BI?
 - Building Blocks of Power BI
 - Getting started with Power BI Desktop
 - Get Power BI Tools
 - Introduction to Tools and Terminology
 - Dashboard in Minutes
 - Refreshing Power BI Service Data
 - Interacting with your Dashboards
 - Sharing Dashboards and Reports
- **Power BI Desktop**
 - Power BI Desktop
 - Extracting data from various sources
 - Workspaces in Power BI
 - Data Transformation
 - Measures and Calculated Columns
 - Query Editor
- **Modelling with Power BI**
 - Introduction to Modelling
 - Modelling Data
 - Manage Data Relationship
 - Optimize Data Models
 - Cardinality and Cross Filtering
 - Default Summarization & Sort by
 - Creating Calculated Columns
 - Creating Measures & Quick Measures
- **Data Analysis Expressions (DAX)**
 - What is DAX?
 - Data Types in DAX
 - Calculation Types
 - Syntax, Functions, Context Options
 - DAX Functions
 - Date and Time
 - Time Intelligence
 - Information
 - Logical
 - Mathematical
 - Statistical

- Text and Aggregate
- Measures in DAX
- ROW Context and Filter Context in DAX
- Operators in DAX - Real-time Usage
- Quick Measures in DAX - Auto validations
- Power Pivot x Velocity & Vertipaq Store
- In-Memory Processing: DAX Performance
- **Modelling with Power BI**
 - Introduction to Modelling
 - Optimize Data Models
 - Setup and Manage Relationships
 - Cardinality and Cross Filtering
 - Default Summarization & Sort by
 - Creating Calculated Columns
 - Creating Measures & Quick Measures
- **Power BI Desktop Visualisations**
 - How to use Visual in Power BI?
 - What Are Custom Visuals?
 - Creating Visualisations and Colour Formatting
 - Setting Sort Order
 - Scatter & Bubble Charts & Play Axis
 - Tooltips and Slicers, Timeline Slicers & Sync Slicers
 - Cross Filtering and Highlighting
 - Visual, Page and Report Level Filters
 - Drill Down/Up
 - Hierarchies and Reference/Constant Lines
 - Tables, Matrices & Conditional Formatting
 - KPI's, Cards & Gauges
 - Map Visualizations
 - Custom Visuals
 - Managing and Arranging
 - Drill through and Custom Report Themes
 - Grouping and Binning and Selection Pane, Bookmarks & Buttons
 - Data Binding and Power BI Report Server
- **Introduction to Power BI Q&A and Data Insights**
 - Why Dashboard? and Dashboard vs Reports
 - Creating Dashboards
 - Configuring a Dashboard: Dashboard Tiles, Pinning Tiles
 - Quick Insights in Power BI
 - Power BI embedded and REST API
- **Direct Connectivity**
 - Custom Data Gateways
 - Exploring live connections to data with Power BI
 - Connecting directly to SQL Azure, HD Spark, and SQL Server Analysis Services/My SQL
 - Introduction to Power BI Development API

- Excel with Power BI: Connect Excel to Power BI, Power BI Publisher for Excel
- Content packs
- Update content packs
- **Publishing and Sharing**
 - Introduction and Sharing Options Overview
 - Publish from Power BI Desktop and Publish to Web
 - Share Dashboard with Power BI Service
 - Workspaces and Apps (Power BI Pro) and Content Packs (Power BI Pro)
 - Print or Save as PDF and Row Level Security (Power BI Pro)
 - Export Data from a Visualization and Publishing for Mobile Apps
- **Refreshing Datasets**
 - Understanding Data Refresh
 - Personal Gateway (Power BI Pro and 64-bit Windows)

Replacing a Dataset and Troubleshooting Refreshing