ANALYTIX LABS

India's Top Ranked Data Science Institute

Industry-Relevant Job Oriented AI & Data Analytics Courses to Get You Hired!

www.analytixlabs.co.in

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About AnalytixLabs

AnalytixLabs is a premier capability building and training solutions firm. It is led by McKinsey, IIM, ISB, and IIT alumni with deep industry experience and a flair for coaching. We endeavor in helping our students acquire and master skills in basic and advanced analytics. Our focus is to enable each student to emerge as an 'Industry-ready' professional and have a successful career through our dedicated placement support. AnalytixLabs has been featured as one of the top institutes numerous times by prestigious publications like Analytics India Magazine and Higher Education Review.

APPROACH

- Outcome-focussed pedagogy
- Practical and application based
- Real Life-like assignments and projects
- Extensive industry network for placements

CONTENT

- Industry-vetted curriculum
- Hands-on projects for every module
- Industry renowned certification
- Business case studies with real-world challenges

FACULTY

- Deep industry experience with a flair for coaching
- 50+ years of cumulative experience with prestigious firms like McKinsey, KPMG, Deloitte, and Facebook
- Strong community networks with peers

BOTTOM LINE

- Job oriented learning
- Continuous career support
- Experiential learning with high ROI

Career path in Analytics & Data Science

Data Science industry is growing by leaps and bounds. Reports show that India alone will capture 32% of the big data market and generate close to USD 20 Billion by 2026. The Covid-19 pandemic caused a seismic shift in shopping and transactions, leading to a huge spike in customer data generation. As a result, tech companies, big and small, opened up doors for skilled data scientists who can help them filter, manage, and make business decisions based on this data.

Roles within the Data Analytics Team

DATA SCIENTIST
Collecting, analyzing, and interpreting large data sets

DATA ANALYST
Review data, analyze, and find meaningful insights for business

DATA ARCHITECT
Review and analyze data infrastructure for an organization

INFRASTRUCTURE ENGINEER
Design, build, and deploy entire data infrastructure for an organization

BUSINESS INTELLIGENCE ANALYST
Work with data to make finance and market intelligence reports

TOP SKILLS

- Statistical analysis
- Data visualization
- Data wrangling
- Predictive modeling
- Data blending & manipulation
- Machine Learning
- MIS reporting analytics
- Deep learning and NLP
- Analytical thinking
- Problem-solving approach
- Communication
- Adaptability
- Business acumen
- Critical thinking
- Product understanding
- Team player

CAREER PATH OF A DATA SCIENTIST

- **Entry level: 6L**
- **Mid-senior: 20L**
- **Senior: 25L**

COMPANIES RECRUITING BUSINESS ANALYTICS PROFESSIONALS

- TCS
- INFOSYS
- AIRTEL
- ICICI
- HDFC
- FRACTAL ANALYTICS
- MU SIGMA
- EBAY
- AMAZON
- DELOITTE
- SNAPDEAL
- FLIPKART
- MAKEMYTRIP
- TIMES OF INDIA
- REDIFF.COM
- ABSOLUTEDATA

About The Course:
Data Science 360

Our Data Science 360 course is designed for absolute beginners with no prior programming background. The course curriculum is vetted and approved by Nasscom and the Ministry of Education and Information Technology. With our comprehensive Data Science course, you learn to analyze data and enable organizations in making data-driven business decisions.

On average 10 hours of self-study per week (practice, assignments, case studies, capstone projects)

24 ASSIGNMENTS and Capstone Projects included

Optional Modules of **"Data Science using R"** and **"Tableau"** are also available at a nominal cost

Program Objective

1 BUILDING BLOCKS

Fundamentals of Analytics (for Non-programmers)

10 Pre-Learning Hours

2 DATA VISUALIZATION & ANALYTICS

Introduction to Analytics & Data Science

Excel | PowerBI | SQL

36 Live Training Hours

3 PYTHON FOR DATA SCIENCE

Python Fundamentals
Data Visualization with Python
Data Analysis with Python

18 Pre-Learning +42 Live Training

4 PREDICTIVE MODELING & MACHINE LEARNING

Traditional Predictive Modeling
Machine Learning (Supervised, Unsupervised, intro to Reinforcement Learning)

36 Live Training Hours

5 TEXT MINING & NLP

Text Mining (Text Extraction, pre-processing, vectorization, EDA, Sentiment analysis, text classification, topic modeling, clustering etc.)

12 Live Training Hours

6 AI & CLOUD COMPUTING

Introduction to AI & Cloud Computing
Artificial Neural Network

6 Live Training Hours

7 ML-OPS & MODEL DEPLOYMENT

Introduction to ML-Ops
ML model deployment - Inference

6 e-Learning Hours

8 INDUSTRY & FUNCTIONAL SESSIONS

Hands-on experience on real-world projects

12 e-Learning Hours

**Pre-learning content refers to basic foundation concepts and candidates are required to go through these using e-learning modules in self-paced mode*

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Training Methodology

INSTRUCTION

INTERACTIVE & BLENDED E-LEARNING WITH 1 YEAR ACCESS TO LMS

Students can choose & blend various learning formats, encompassing classroom bootcamps, interactive live online and e-learning sessions. All students then get access to learning management system for 12 months, keeping in mind the constant upgradation of the courses according to industry standards.

Benefits

- ➔ Interactive Live Learning available at Gurgaon, Noida, and Bangalore.
- ➔ Live Online streaming facilitates the dynamics that occur in a classroom.
- ➔ Learning at your own pace to gain knowledge more quickly and at a lower cost.

REINFORCEMENT

PRACTICAL HANDS-ON LEARNING

Our training includes variety of job oriented hands-on projects with real business and data challenges. Crafted by experts to keep you ahead of the curve in industry best practices, Our case study based modules ensures that participants learn practical applications along with the theoretical concepts.

Benefits

- ➔ Latest curriculum, meticulously designed project work
- ➔ Extensive post sessions support is provided for real-world skills,
- ➔ Cost-effective courses with high ROI, making it worth every penny you invest.

CERTIFICATIONS

IN COLLABORATION WITH NASSCOM , FUTURE SKILLS PRIME

FutureSkillsPrime is one of the lighthouse schemes under the Government's Trillion Dollar Digital Economy initiative. Data Science 360 course approved by NASSCOM, aligned to Industry standards and comes with additional benefits for students

Benefits

- ➔ Joint certificate from NASSCOM -FSP and AnalytixLabs
- ➔ The individual course modules are mapped to NOS (National Occupational Standards)
- ➔ Scholarship upto INR 8,000 (which will be directly deposited to the student's bank account by GoI) *

Time & Investment

Training Hours:
Pre-learning videos (27 hours)+ Live training (145 hours) + E-learning hours (6) + Practice, Assignments & Project work (375 hours)

Training Cost:

Program fees for the Weekend Sessions *After up to 40% combo course discount* ~~*INR 67,797*~~ ***INR 52,000 + 18% GST*** *(Subjected to profile evaluation)*

Program fees for the Blended eLearning **-INR 40,000 + 18% GST**

Optional Module of "Data Science using R " is also available at a nominal cost of ~~*INR 20,000*~~ ***INR 4,000 + 18% GST***

Optional Module of "Data Visualization using Tableau " is also available at a nominal cost of ~~*INR 20,000*~~ ***INR 8,000 + 18% GST***

Timing:
6 hours per weekend live training (Saturday & Sunday 3 hours each) + Practice (~15 hours per week)

Training mode:
- Fully interactive Live Online Class / Classroom (Gurgaon, Bangalore and Noida)
- Blended e-Learning with Live Doubt Support on weekends

(In addition to the above, you will also get access to the recordings for future reference and self study)

Machine Learning module will be conducted through Instructor-Led LIVE Online Learning during weekends.

Components:
Learning Management System access for courseware like class recordings - study material, Industry- relevant project work

Certification:
Participants will be awarded a *joint industry approved certificate,* ***from AnalytixLabs & Future Skills Prime by NASSCOM,*** on successful completion of the stipulated requirements including an evaluation.

(Please note that the NASSCOM assessment will be AI proctored. Hence, it is mandatory for candidates to have a webcam equipped computer for the same)

Program Benefits

Distinctive Faculty

Our faculty members have proven track record with global analytics experience. They are drawn from leading consulting and technology firms such as McKinsey & Co, KPMG, Deloitte, Fidelity, Facebook and Genpact. Together our team has over 50 years of global analytics experience spread across various domains like Telecom, Hi-Tech, Retail, Risk, Banking and Finance.

Industry Relevant Curriculum

Our courses are crafted by experts to keep you ahead of the curve in industry best practices. Case study based modules ensure that participants learn practical applications along with the theoretical concepts. Further to this, new courses are continuously launched and old ones keep evolving as per the latest and upcoming industry trends.

Placement Guidance

Strong focus on job relevant skills thereby helping in placements is our key belief. We have an extensive industry network to help students. Students get continuous guidance from our experienced faculty on job applications, interview preparation, conduct mock interviews if required and referring CVs to various companies as and when suitable.

Flexible Format

Students can choose & blend various learning formats, encompassing classroom bootcamps, interactive live online and e-learning sessions. All students then get access to state-of-art learning system for 12 months, keeping in mind the constant upgradation of the courses according to industry standards.

Experiential Learning

Industry interface and domain expertise to balance theoretical and practical learning. Our training includes variety of job oriented hands-on projects with real business and data challenges

Effective Pedagogy

High degree of commitment & personal attention is given through small batch size and individual counselling. Hands-on sessions and practice assignments on real life business datasets are included to ensure assimilated learning.

Placements Assistance

Our Data Science 360 program comes under AnalytixLabs' promise of dedicated Placement Assistance. A team of seasoned professionals will help you based on your overall educational background and work experience. Job referrals are based on the requirements we get from various organizations, HR consultants, and a large pool of AnalytixLabs Alumni. There will be continuous support from our side for as long as you need it. Most of our students do get multiple interview calls and good career options based on the skills they learn during the course.

SALARY INSIGHTS

Type of Opportunity	Salary Range (in INR)
Paid Internships	20,000–35,000
Full Time Jobs	4,00,000–24,00,000

Experience Levels	Salary Range (in INR)	% of Hike
1-3 Years	4,00,000 –12,00,000	30% -80%
3-5 Years	6,00,000–12,00,000	25% -50%
5+Years	90,0,000–24,00,000	20%-35%

Our faculty offers dedicated mentoring and support for as long as needed by our students.

What our students have to say?

Sandeep's Story of **Achieving 160% Hike and Becoming a Sr. Analyst**

Shailee Started Her Career in Data Science **after 4 Yrs of Career Break**

A **Successful Data Scientist** after **B.Com - 100% Hike!**

As a former project manager, **Akshi joined EXL as a ML professional**

Mechanical to Data Science - Shubham's striking career shift!

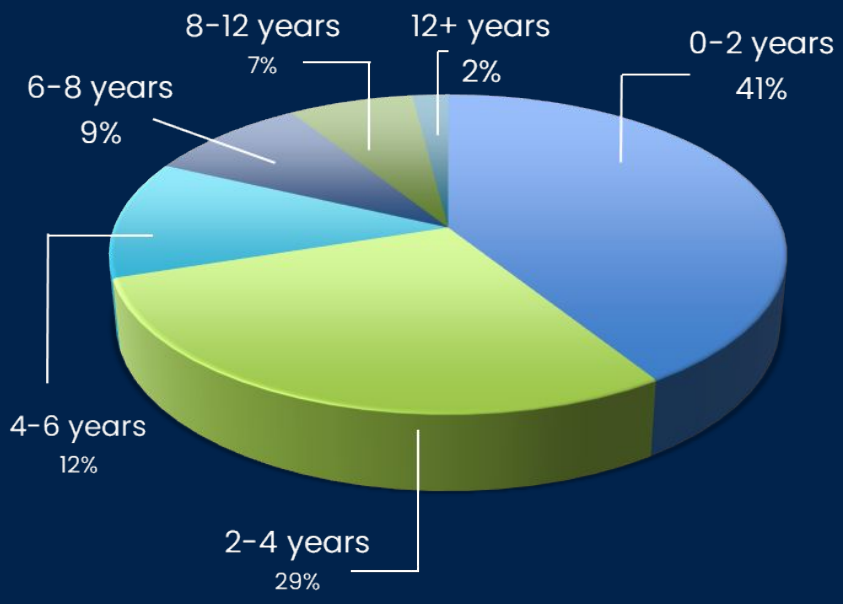
Ankita's Story of **Career Transition in Analytics - 42% Salary Hike!**

Meet The Class

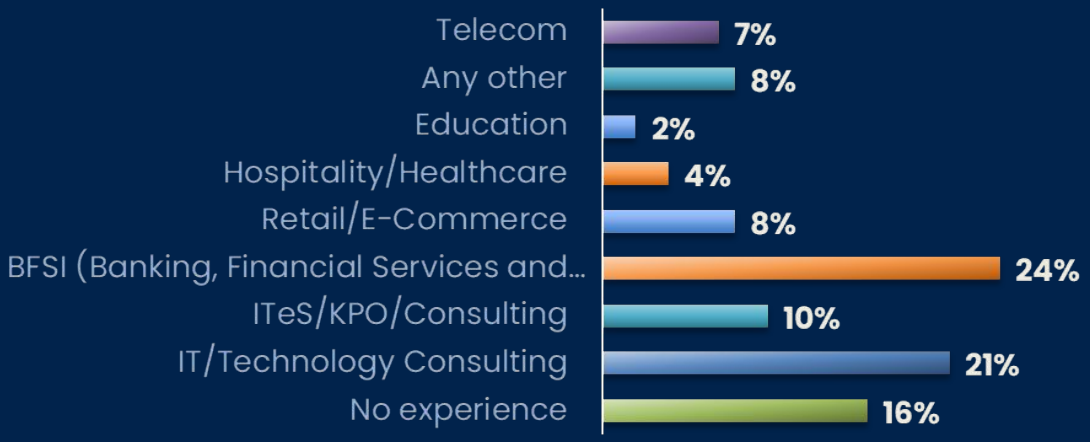
OUR STUDENTS

Work Experience

Our students comprise of beginners as well as highly experienced data science professionals looking to upskill. They are placed into different data science job roles spanning across multiple industries.



INDUSTRY



FUNCTION

Projects

EXPERIENTIAL LEARNING

The assignments and case studies are curated using real-life data and problems to ensure that you are equipped with the skills needed for hiring and also deal with the on-job challenges. They cover popular industries and domains to have maximum coverage based on job openings available in the industry.

KEY INDUSTRIES COVERED :

- **Retail / E-commerce**
- **Telecom**
- **BSFI (Banking & Insurance)**
- **Hospitality**
- **Healthcare**
- **Manufacturing**

KEY SKILLS EMPHASIZED:

- Data Handling, Manipulation, Preparation
- Data Analytics & Visualization
- Exploratory Data Analysis (Designing KPI's)
- Descriptive Analytics
- Diagnostics Analytics
- Predictive Modeling
- Statistical Analysis
- Machine Learning (Supervised, Unsupervised)
- Text Mining & Natural Language Processing
- Model Deployment

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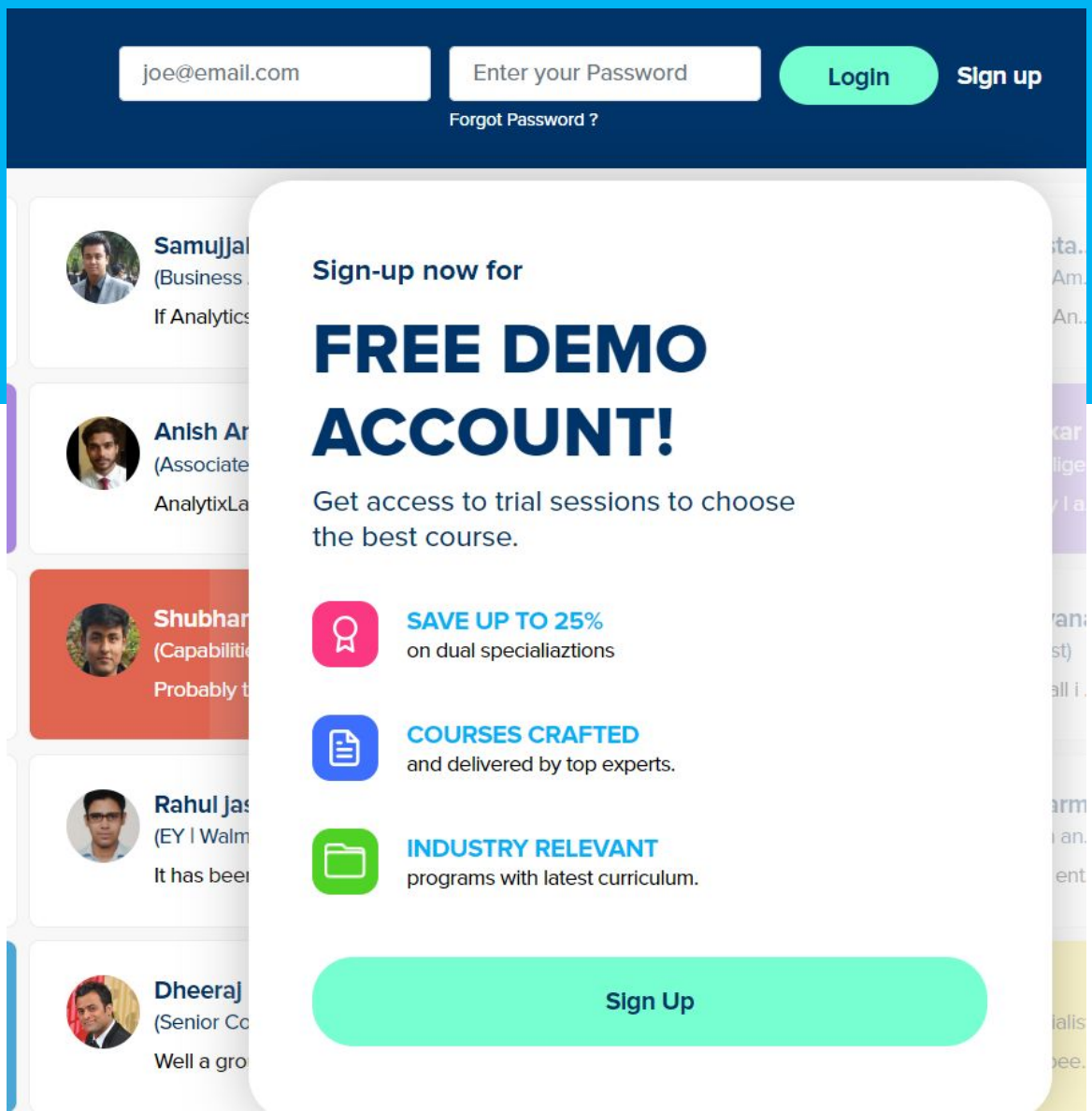
DEMO SIGN UP

Sign up for a quick demo session with our experts and get hands-on experience of how our courses are taught and sessions held at AnalytixLabs

Sign up for a Demo

Connect on WhatsApp!



ANALYTIX LABS

COURSE CURRICULUM

Master the tools and acquire all the skills through a comprehensive learning model that suits your time and energy. Know everything about the course modules

Sign up for a Demo

1 Building Blocks for Data Visualization & Analytics (Pre - Learning)

Introduction to Bridge Course & Analytics Software's

Basic Excel

- Excel Environment
- Key Terminologies
- Short Cuts
- Key Functionalities
- Copy-paste-paste special
- Formatting & conditional Formatting
- Basic Excel Functions
- Types of Functions
- Relational operators
- Data Sorting, Filtering and Data Validation
- Understanding of Name Ranges
- Pivot tables
- Charts
- Basics of charts

RDBMS & SOL (Basics)

Basic RDBMS Concepts

- Introduction to Relational Database management system. Why SQL?
- A glance at the tool and its advantages and disadvantages
- Understanding Schema, ERDs and Metadata

Introduction to MS SOL Server

- What is SQL - A Quick Introduction
- Installing MS SQL Server for windows
- Introduction to SQL Server Management Studio
- Understanding basic database concepts
- Getting started

Introduction to Analytics & Data Science

- What is analytics & Data Science?
- Business Analytics vs. Data Analytics vs. Data Science
- Common Terms in Analytics
- Analytics vs. Data warehousing, OLAP, MIS Reporting
- Types of data (Structured vs. Unstructured vs. Semi Structured)
- Relevance of Analytics in industry and need of the hour
- Critical success drivers
- Overview of analytics tools & their popularity
- Analytics Methodology & problem-solving framework
- Stages of Analytics

2 Data Visualization & Analytics (Excel) (1/3)

Quick Recap of Basics of Excel Data manipulation using functions

- Descriptive functions
- Logical functions: IF, and, or, not
- Date and Time functions
- Text functions
- Array functions
- Use and application of lookup functions
- Limitations of lookup functions
- Using Index, Match, Offset, reverse lookup

Data analysis and reporting

- Data Analysis using Pivot Tables - use of row and column shelf, values and filters
- Difference between data layering and cross tabulation, summary reports, advantages and limitations
- Change aggregation types and summarization
- Creating groups and bins in pivot data
- Concept of calculated fields, usage and limitations
- Changing report layouts - Outline, compact and tabular forms
- Show and hide grand totals and subtotals
- Creating summary reports using pivot tables

Data Visualization in Excel

- Overview of chart types - column/bar charts, line/area, pie, doughnut charts, scatter plots
- How to select right chart for your data
- Creating and customizing advance charts thermometer charts, waterfall charts, population
- Pyramids

Overview of Dashboards

- What is dashboard & Excel dashboard
- Adding icons and images to dashboards
- Making dashboards dynamic

Create dashboards in Excel - Using Pivot controls

- Concept of pivot cache and its use in creating interactive dashboards in excel
- Pivot table design elements - concept of slicers and timelines
- Designing sample dashboard using Pivot Controls
- Design principles for including charts in dashboards - do's and dont's

Business Dashboard Creation

- Management Dashboard for Sales & Services
- Best practices - Tips and Tricks to enhance dashboard designing

2 Data Visualization & Analytics (SQL) (2/3)

Quick Recap of RDBMS & Basic SQL

Data based objects creation (DDL Commands)

- Creating databases and tables. Understanding data types
- Inserting values into the table
- Altering table properties
- Introduction to Keys and constraints
- Creating, Modifying & Deleting Tables
- Create Table & Create Index statements
- Drop & Truncate statements
- - Uses & Differences
- DD Statements with constraints
- Import and Export wizard to get the data in SQL server from excel files or delimited files

Data manipulation (DML Commands)

- Data Manipulation statements
- Insert, Update & Delete statements
- Select statement - Sub setting, Filters, Sorting. Removing Duplicates, grouping and
- aggregations etc.
- Operators, predicates and built-in functions (Top, distinct, Limit)
- Where, Group By, Order by & Having clauses
- SQL Functions - Number, Text, Date, etc.
- SQL Keywords - Top, Distinct, Null, etc.
- SQL Operators - Relational (single valued and multi valued), Logical (and, or, not), Use of wildcard operators and wildcard characters, etc.

Accessing data from Multiple Tables using SELECT

- Append and Joins
- Union and Union All - Use & constraints
- Intersect and Except statements
- Table Joins - inner join, left join, right join, full join
- Cross joins/ cartisian products, self joins, natural joins etc
- Inline views and sub-queries & it's types
- Optimizing your work
- Update operations with and without joins

Advanced SQL

- Creating table copy and database copy
- Views
- Transactions
- Stored Procedures in SQL
- Crud operations using stored procedures
- Window functions in SQL
- Miscellaneous Topics: Rollup and cube

Apply learning's on Business Case study

2 Data Visualization & Analytics (PowerBI) (3/3)

Introduction

- Introduction to Power BI
- Installing Power BI Desktop (Signup for PowerBI)
- Various Options in Power BI Desktop
- Views in Power BI Desktop
- Template Apps
- Task pipeline when your working on a project

Data Preparation and Modelling

- Connect and Retrieve data from different sources (csv, excel etc.)
- Query editor in Power BI
- Power Query for cleaning the data
- Power Query Functions – Text, Date, Numeric
- Power Query Conditional Columns
- Clean & transform data with Query Editor
- Define data granularity
- Combining data – Merging & Appending
- Fill Down in Power BI, Grouping, Transpose, Unpivot, Data Types, Replace errors and values, Keep and Remove rows, Add Remove and Go To Columns
- Work with relationships and cardinality
- Types of Relationships (1:1, 1: Many, Many:1)
- Optimizing for performance
- PBIDS Files

Data Analysis Expressions (DAX)

- Introduction to DAX
- Calculated tables, Columns & Measures
- Time Intelligence in DAX
- Frequently Used DAX functions in Real time (Calendar Functions, Filter Functions, Information functions, Text Functions, Logical Functions, Math functions, Parent & Child functions etc..)

Reports Development (Visuals in Power BI)

- Introduction to work with Power BI visuals
- Reports Development in Power BI
- Working with Different Visuals /Charts
- Formatting Options in Reports
- Use a slicer to filter visualizations
- Working with Filters (Page Level, Include/Exclude, Report Level, Cross report Filter)
- Download & use Custom Visuals from the galary
- Add an R or Python visual
- Work with key performance indicators
- Project to Implement the learning's

2 Data Visualization & Analytics (PowerBI) (3/3)

Data Driven Story Reports:

- Introduction to create a data-driven story
- Design a report layout
- Add buttons, bookmarks, and selections
- Creating Interactive reports with bookmarks
- Design report navigation
- Use interactions and drill through
- Comment on reports
- Tune report performance
- Optimize reports for mobile use

Dashboards:

- Introduction to dashboards
- Configure data alerts
- Explore data by asking questions
- Add a dashboard theme
- Pin a live report page to a dashboard
- Configure a real-time dashboard
- Configure data classification
- Set mobile view

Advanced / Other Power BI Concepts

- Row level Security (Static Row Level Security, User login based row level security, Organizational level security)
- Dynamic Measures, Filters, Axis in Charts
- Power BI Template file
- Wallpapers, Themes (create custom themes)

Power BI Analytics:

- Explore statistical summary
- Identify outliers with Power BI visuals
- Group and bin data for analysis
- Use the Analyze feature
- Use advanced analytics custom visuals
- Review Quick insights

Publishing workbooks and Workspace

- Publishing the Reports, Dashboards, APP
- Share data with Colleagues and Others
- Publish & manage report to the web
- Create an app workspace and add users
- Create a QR code to share a tile
- Embed a report in share point Online

3 Building Blocks for Python and ML (Pre-Learning)

Programming Basics

- Introduction to programming
- Computer programs and business use
- Database and its requirement in the software applications.
- What id an IDE - Integrated development environment.
- Different programming languages, High level vs Low level languages,
- Language translators - Complier and Interpreter, Why syntax rules?
- Programming basics: variables, INC rules: Identifier Naming Conventions, Datatypes, Operators.
- Control flow statements: Conditional statements and Loops.
- Functions and UDFS.
- Logic building and Pseudo codes.

Introduction to Basic Statistics

- Introduction to Statistics
- Measures of central tendencies
- Measures of variance
- Measures of frequency
- Measures of Rank
- Basics of Probability, distributions
- Conditional Probability (Baes Theorem)

Introduction to Mathematical foundations

- Sets & Functions
- Introduction to Linear Algebra
    - Matrices Operations
- Introduction to Calculus
    - Derivatives & Integration
    - Maxima, minima
    - Area under the curve

3 Python For Data Science (1/2)

Python Essentials (Core)

- Overview of Python- Starting with Python
- Why Python for data science?
    - Anaconda vs. python
- Introduction to installation of Python
- Introduction to Python IDE's(Jupyter,/python)
- Concept of Packages - Important packages
- Concept of Packages - Important packages
    - NumPy, SciPy, scikit-learn, Pandas,
- Matplotlib, etc
- Installing & loading Packages & Name Spaces
- Data Types & Data objects/structures (strings, Tuples, Lists, Dictionaries)
- List and Dictionary Comprehensions
- Variable & Value Labels - Date & Time Values
- Basic Operations - Mathematical/string/date
- Control flow & conditional statements
- Debugging & Code profiling
- Python Built-in Functions (Text, numeric, date, utility functions)
- User defined functions - Lambda functions
- Concept of apply functions
- Python - Objects - OOPs concepts
- How to create & call class and modules?

Operations with NumPy (Numerical Python)

- What is NumPy?
- Overview of functions & methods in NumPy
- Data structures in NumPy
- Creating arrays and initializing
- Reading arrays from files
- Special initializing functions
- Slicing and indexing
- Reshaping arrays
- Combining arrays
- NumPy Maths

Overview of Pandas

- What is pandas, its functions & methods
- Pandas Data Structures (Series & Data Frames)
- Creating Data Structures (Data import – reading into pandas)

Cleansing Data with Python

- Understand the data
- Sub Setting / Filtering / Slicing Data
    - Using (] brackets
    - Using indexing or referring with column
    - names/rows
    - Using functions
    - Dropping rows & columns
- Mutation of table (Adding/deleting columns)
- Binning data (Binning numerical variables in to categorical variables)
- Renaming columns or rows
- Sorting (by data/values, index)
    - By one column or multiple columns
    - Ascending or Descending
- Type conversions
- Setting index
- Handling duplicates /missing/Outliers
- Creating dummies from categorical data (using get dummies())
- Applying functions to all the variables in a data frame (broadcasting)
- Data manipulation tools(Operators, Functions, Packages, control structures, Loops, arrays etc.)

Data Analysis using Python

- Exploratory data analysis
- Descriptive statistics, Frequency Tables and summarization
- Uni-variate Analysis (Distribution of data & Graphical Analysis)
- Bi-Variate Analysis(Cross Tabs, Distributions & Relationships, Graphical Analysis)

3 Python For Data Science (2/2)

Data Visualization with Python

- Introduction to Data Visualization
- Introduction to Matplotlib
- Basic Plotting with Matplotlib
- Line Plots

Basic Visualization Tools

- Area Plots
- Histograms/Density plots
- Bar Charts/Stacked charts
- Pie Charts
- Box Plots
- Scatter Plots
- Sub Plots

Statistical Methods & Hypothesis Testing

- Descriptive vs. Inferential Statistics
- What is probability distribution?
- Important distributions (discrete & continuous distributions)
- Deep dive of normal distributions and properties
- Concept of sampling & types of sampling
- Concept of standard error and central limit theorem
- Hypothesis Testing & Applications
- Statistical Methods -Z/t-tests (One sample, independent, paired), ANOVA, Correlation and Chi-square

4 Predictive Modeling & Machine Learning

Introduction to Predictive Modeling

- Concept of model in analytics and how it is used?
- Common terminology used in modeling process
- Types of Business problems - Mapping of Algorithms
- Different Phases of Predictive Modeling
- Data Exploration for modeling
- Exploring the data and identifying any problems with the data (Data Audit Report)
- Identify missing/Outliers in the data
- Visualize the data trends and patterns

Introduction to Machine Learning

- Applications of Machine Learning
- Supervised vs Unsupervised Learning vs. Reinforcement Learning
- Overall process of executing the ML project
- Stages of ML Project
- Concept of Over fitting and Under fitting (Bias-Variance Trade off) & Performance Metrics
- Concept of feature engineering
- Regularization (LASSO, Elastic net and Ridge)
- Types of Cross validation(Train & Test, K-Fold validation etc.)
- Concept of optimization – Gradient descent algorithm
- Cost & optimization functions
- Python libraries suitable for Machine Learning

Supervised Learning: Regression problems

- Linear Regression
- Nonlinear Regression
- K-Nearest Neighbor
- Decision Trees
- Ensemble Learning - Bagging, Random
- Forest, Adaboost, Gradient Boost, XGBoost
- Support Vector Regressor

Supervised Learning: Classification problems

- Logistic Regression
- K-Nearest Neighbor
- Naive Bayes Classifier
- Decision Trees
- Ensemble Learning - Bagging, Random
- Forest, Adaboost, Gradient Boost, XGBoost
- Support Vector Classifier

Unsupervised Learning

- Principle Component Analysis
- K-Means Clustering
- Density-Based Clustering

Recommender Systems

- Market Basket Analysis (MBA)
- Content-based recommender systems
- Collaborative Filtering

Time Series Forecasting

- What is forecasting?
- Applications of forecasting
- Time Series Components and Decomposition
- Types of Seasonality
- Important terminology: lag, lead,
- Stationary, stationary tests, auto
- correlation & white noise, ACF & PACF
- plots, auto regression, differencing
- Classification of Time Series Techniques
- (Uni-variate & Multivariate)
- Time Series Modeling & Forecasting
- Techniques
    - Averages (Moving average, Weighted
    - Moving Average)
    - ETS models (Holt Winter Methods)
    - Seasonal Decomposition
    - ARIMA/ARIMAX/SARIMA/SARIMAX
    - Regression
    - Evaluation of Forecasting Models

Evaluate risk of deploying algorithmic models

Evaluate business performance of algorithmic models

5 Text Mining using NLP

Introduction to Text Mining

- Text Mining - characteristics, trends
- Text Processing using Base Python & Pandas, Regular Expressions
- Text processing using string functions & methods
- Understanding regular expressions
- Identifying patterns in the text using regular expressions

Text Processing with modules like NLTK, sklearn

- Getting Started with NLTK
- Introduction to NLP & NLTK
- Introduction to NLTK Modules (corpus, tokenize, Stem, collocations, tag, classify, cluster, tbl, chunk, Parse, ccg, sem, inference, metrics, app, chat, toolbox etc.)

Initial data processing and simple statistical tools

- Reading data from file folder/from text file, from the Internet & Web scrapping, Data Parsing
- Cleaning and normalization of data
- Sentence Tokenize and Word Tokenize, Removing insignificant words("stop words"). Removing special symbols, removing bullet points and digits, changing letters to lowercase, stemming /lemmatization /chunking
- Creating Term-Document matrix
- Tagging text with parts of speech
- Word Sense Disambiguation
- Finding associations
- Measurement of similarity between documents and terms
- Visualization of term significance in the form of word clouds

Advanced data processing and visualization

- Vectorization (Count. TF-IDF. Word Embedding's)
- Sentiment analysis (vocabulary approach, based on Bavesian probability methods)
- Name entity recognition (NER)
- Methods of data visualization
    - word length counts plot
    - word frequency plots
    - word clouds
    - correlation plots
    - letter frequency plot
    - Heat map
- Grouping texts using different methods
- Language Models and n-grams--Statistical
- Models of Unseen Data (Smoothing)

Text Mining - Predictive Modeling

- Semantic similarity between texts
- Text Segmentation
- Topic Mining (LDA)
- Text Classification(spam detection,
- sentiment analysis, Intent Analysis)

6 Introduction to AI & DL & Cloud Computing

Introduction to Artificial Intelligence (AI)

- Modern era of AI
- Role of Machine learning & Deep Learning in AI
- Hardware for AI (CPU vs. GPU vs. FPGA)
- Software Frameworks for AI & Deep Learning
- Key Industry applications of AI

Introduction to Deep Learning

- What are the Limitations of Machine Learning?
- What is Deep Learning?
- Advantage of Deep Learning over Machine learning
- Reasons to go for Deep Learning
- Real-Life use cases of Deep Learning
- Overview of important python packages for Deep
- Learning

Artificial Neural Network

- Overview of Neural Networks
- Activation Functions, hidden layers, hidden units
- Illustrate & Training a Perceptron
- Important Parameters of Perceptron
- Understand limitations of A Single Layer Perceptron
- Illustrate MultiLayer Perceptron
- Understand Backpropagation - Using Example
- Implementation of ANN in Python- Keras

Introduction to Google Colab/Kaggle workbooks

Introduction to Cloud Computing

- What is Cloud Computing? Why it matters?
- Traditional IT Infrastructure vs. Cloud Infrastructure
- Cloud Companies (Microsoft Azure, GCP, AWS) & their Cloud
- Services (Compute, storage, networking, apps, cognitive etc.)
- Use Cases of Cloud computing
- Over view of Cloud Segments: laaS, PaaS, SaaS
- Overview of Cloud Deployment Models
- Overview of Cloud Security
- AWS vs. Azure vs. GCP

7 Introduction to ML-Ops & Model Deployment (self-paced)

Introduction to MLOps

- What is MLOps
- MLODs vs. DevOps vs. Data Engineering
- Why MLOps is important?
- ML Engineering Pipeline
- How to implement MLOps?
- Understand end to end MLOps solution

Deployment of ML Model in the cloud

- What is model deployment?
- Ways of deployment of models
- Introduction to Flask
- How to create simple app?
- Deployment of ML model in the cloud

8 Industrial & Functional Sessions (Domain Understanding)

Business problem solving

- Introduction to Business requirement understanding
- BRD VS. FRD
- Creating analytics project documentation
- Creating visualizations based on the requirement
- How to define KPI's & understand design elements?
- Define business outcomes and create visualizations from results of the analysi
- How to prepare for client discussions?
- Introduction to Analytics Project Management

Introduction to Industry & Functional Sessions

- Understand to Data Sources for Various Industries
- Overview of different industries & applications
    - Retail/E-Commerce
    - Banking & Financial Services
    - Telecom & Networking
    - Digital & Social Media
    - Travel, Transportation and Hospitality
    - Utilities
    - Manufacturing & FMCG

Marketing Analytics

- Introduction to Marketing Function
- Marketing Research - Analytics
- Customer Analytics
- Campaign Analytics
- Pricing Analytics
- Marketing Return on Investment (MROI)
- Market Mix Models
- Applications in across industries

Risk Analytics

- Introduction to Risk Function
- Enterprise Risk Function
- Credit Scoring (Application & Behavioral)
- Fraud Analytics
- Applications in across industries

Operation Analytics

- Overview of Operation Analytics
- Applications Analytics in different functions
- Service Operations
- Manufacturing
- Logistics
- Business Support Functions (HR Analytics)
- Inventory Management
- Applications in across industries

Digital Analytics(Web Analytics)

Prerequisite: Completion of assignments and projects of earlier modules within this course

9 Data Visualization & Analytics - Tableau (Optional E-learning at minimal cost)

Getting Started

- What is Tableau?
- Tableau product suite
- How Does Tableau Work?
- Tableau Architecture
- Connecting to Data & data source concepts
- Understanding the Tableau workspace
- Dimensions and Measures
- Data Types & Default Properties
- Tour of Shelves & Marks Card
- Using ShowMe
- Saving and Sharing your work-overview

Data Handling & Summaries

- Date Aggregations and Date parts
- Cross tab & Tabular charts
- Totals & Subtotals
- Bar Charts & Stacked Bars
- Line Graphs with Date & Without Date
- Treemaps/Scatter Plots
- Individual Axes, Blended Axes, Dual Axes & Combination chart/Edit axis
- Parts of Views
- Sorting
- Trend/Reference Lines/Forecasting
- Filters/Context filters
- Sets (In/Out Sets/Combined Sets
- Grouping/Bins/Histograms
- Drilling up/down –drill through
- Hierarchies
- View data
- Actions (across sheets)

Building Advanced Reports/ Maps

- Explain latitude and longitude
- Default location/Edit locations
- Building geographical maps
- Using Map layers

Calculated Fields

- Aggregate vs. Disaggregate data
- Explain -#Number of Rows
- Basic Functions (String/Date/Numbers etc)
- Usage of Logical conditions

Table calculations

- Explain scope and direction
- Percent of Total, Running / Cumulative calculations
- Introduction to LOD (Level of Detail) Expressions
- User applications of Table calculations

Parameters

- Using Parameters in calculated fields
- Bins/Reference Lines
- Filters/Sets
- Display Options (Dynamic Dimension/Measure Selection)
- Create What-If/ Scenario analysis

Building Interactive Dashboards

- Combining multiple visualizations into a dashboard (overview)
- Making your worksheet interactive by using actions
- Filter/URL/Highlight
- Complete Interactive Dashboard for Sales & Services

Building Stories

- Story Points
- Options in Formatting your Visualization
- Working with Labels and Annotations
- Effective Use of Titles and Captions

Working with Data

- Multiple Table Join
- Data Blending
- Difference between joining and blending data, and when we should do each
- Toggle between to Direct Connection and Extracts

Sharing work with others

- Sharing Workbooks
- Publish to Reader/PDF
- Publish to Tableau Server and share on the web

9 R For Data Science (Optional E-learning at minimal cost) (1/3)

Data Importing/Exporting

- Introduction R/R-Studio - GUI
- Concept of Packages - Useful Packages (Base & Other packages)
- Data Structure & Data Types (Vectors, Matrices, factors, Data frames, and Lists)
- Importing Data from various sources
- Exporting Data to various formats
- Viewing Data (Viewing partial data and full data)
- Variable & Value Labels - Date Values

Data Manipulation

- Creating New Variables (calculations & Binning)
- Dummy variable creation
- Applying transformations
- Handling duplicates/missing's
- Sorting and Filtering
- Sub setting (Rows/Columns)
- Appending (Row/column appending)
- Merging/Joining (Left, right, inner, full,outer)
- Data type conversions
- Renaming
- Formatting

Data Manipulation

- Reshaping data
- Sampling
- Operators
- Control Structures (if, if else)
- Loops (Conditional, iterative loops)
- apply functions
- Arrays
- R Built-in Functions
- Text, Numeric, Date, utility
- R User Defined Functions
- Aggregation/Summarization

Data Analysis

- Introduction exploratory data analysis
- Descriptive statistics, Frequency Tables and summarization
- Uni-variate Analysis (Distribution of data)
- Bivariate Analysis(Cross Tabs, Distributions &
- Relationships)

Data Visualization with R

- Basic Visualization Tools
  - Bar Charts/Pie Charts
  - Stacked Bar
  - Histograms/Box Plots
  - Scatter Plots
  - Line Plots
- How to build interactive web pages
  - Introduction to Shiny
  - Creating and Customizing Shiny Apps
  - Additional Shiny Features

9 Statistical Analysis - Machine Learning with R (Optional E-learning at minimal cost) (2/3)

Introduction to Statistics

- Basic Statistics - Univariate, Bivariate Analysis, Measures of Central Tendencies and Variance
- Building blocks - Probability Distributions – Normal distribution - Central Limit Theorem
- Inferential Statistics -Sampling - Concept of Hypothesis Testing
- Statistical Methods -Z/t-tests (One sample, independent, paired), Anova, Correlations and Chi-square

Introduction to Predictive Modeling

- Concept of model in analytics and how it is used?
- Common terminology used in modeling process
- Types of Business problems - Mapping of Algorithms
- Different Phases of Predictive Modeling
- Data Exploration for modeling
- Exploring the data and identifying any problems with the data (Data Audit Report)
- Visualize the data trends and patterns

Supervised Learning: Regression problems using OLS Regression

- Introduction - Applications
- Assumptions of Linear Regression
- Building Linear Regression Model
- Understanding standard metrics (Variable significance, -square/Adjusted R-square, Global hypothesis ,etc)
- Validation of Models (Re running Vs. Scoring)
- Standard Business Outputs
- Interpretation of Results - Business Validation - Implementation on new data

Supervised Learning: Classification problems using Logistic Regression

- Introduction - Applications
- Linear Regression Vs. Logistic Regression Vs. Generalized Linear Models
- Building Logistic Regression Model
- Understanding standard model metrics (Concordance, Variable significance, Gini, KS, Misclassification. etc)
- Validation of Logistic Regression Models
- Standard Business Outputs
- Interpretation of Results - Business Validation - Implementation on new data

Introduction to Machine Learning

- Applications of Machine Learning
- Supervised vs Unsupervised Learning VS. Reinforcement Learning
- Overall process of executing the ML project
- Stages of ML Project
- Concept of Over fitting and Under fitting (Bias- Variance Trade off) & Performance Metrics
- Types of Cross validation (Train & Test, K-Fold validation etc.)
- Concept of optimization - Gradient descent algorithm
- Cost & optimization functions
- R libraries suitable for Machine Learning

9 Statistical Analysis - Machine Learning with R (Optional E-learning at minimal cost) (3/3)

Supervised Learning: Regression problems

- K-Nearest Neighbor
- Decision Trees
- Ensemble Learning - Bagging, Random Forest, Adaboost, Gradient Boost, XGBoost
- Support Vector Regressor

Supervised Learning: Classification problems

- K-Nearest Neighbor
- Naive Bayes Classifier
- Decision Trees
- Ensemble Learning - Bagging, Random Forest, Adaboost, Gradient Boost, XGBoost
- Support Vector Classifier

Supervised Learning: Classification problems

- Principle Component Analysis
- K-Means Clustering

Time Series Forecasting

- What is forecasting?
- Applications of forecasting
- Time Series Components and Decomposition
- Types of Seasonality
- Important terminology: lag, lead, Stationary, stationary tests, auto correlation & white noise, ACF & PACF plots, auto regression, differencing
- Classification of Time Series Techniques (Univariate & Multivariate)
- Time Series Modeling & Forecasting Techniques
    - Averages (Moving average, Weighted Moving Average)
    - ETS models (Holt Winter Methods)
    - Seasonal Decomposition
    - ARIMA/ARIMAX/SARIMA/SARIMAX
    - Regression
    - Evaluation of Forecasting Models

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