ANALYTICS CIRCLE

India’s Best Data Science Institute

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

About Analytics Circle

Analytics Circle a premier capability building and training solutions firm. It is led by Top MNCs 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.

APPROACH

- Outcome-focused 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
- 10+ years of cumulative experience with prestigious firms like Wipro, KPMG, Deloitte, EXL and Genpact
- Strong community networks with peers

BOTTOM LINE

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

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

About the Course: Data Science

- Our Data Science course is designed for absolute beginners with no prior programming background.
- With our comprehensive Data Science course, you learn to analyze data and enable organizations in making data-driven business decisions

Training Methodology

INSTRUCTION

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

Students can choose & blend various learning formats, encompassing classroom and interactive live online 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 classroom Learning at Delhi.
- Live Online streaming facilitates the dynamics that occur in a classroom.

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 ensure that participants learn practical applications along with the theoretical concepts.

Program Benefits

Distinctive Faculty

Our faculty members have proven track record with global analytics experience. They are drawn from leading consulting and technology with 10+ years of experience.

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.

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 program with 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 and HR consultants. 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.
- Our faculty offers dedicated mentoring and support for as long as needed by our students.

SALARY INSIGHTS

Type of Opportunity	Salary Range (in INR)
Paid Internships	15,000–30,000
Full Time Jobs	4,00,000–15,00,000

Experience Levels	Salary Range (in INR)
1-3 Years	4,00,000 –7,00,000
3-5 Years	6,00,000–12,00,000
5+Years	9,00,000–20,00,000

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
- BSFI (Banking & Insurance)
- Healthcare
- Telecom
- Hospitality
- Manufacturing

KEY SKILLS EMPHASIZED:

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

Python- Fundamental

1) **Introduction to Python**
2) **Features and Applications of Python**
3) **Introduction to Anaconda/Jupyter**
4) **Basics of Jupyter**
5) **Defining variables and rules for naming a variable**
6) **Data types in Python**
7) **Types of Operators in Python**
8) **print() method and its arguments**
9) **input() method**
10) **Strings**

    a) String indexing
    b) String slicing
    c) String methods I - upper, lower, title, capitalize
    d) String methods II - startswith, ends with, find, index, count
    e) String methods III - isupper, islower, isalpha, isdigit
    f) String methods IV - join, split, replace
    g) String immutability

11) Conditional Statements

a) Understanding indentation
b) If
c) If-else
d) If-elif
e) If-elif-else
f) Nested if

12) Loops

a) What are Iterators/iterables?
b) for loops
c) range function
d) while loops
e) break, continue and pass statements
f) for-else
g) while-else

13) Pattern based problems

a) Number patterns
b) Alphabet patterns
c) Shapes patterns

14) User Defined function

a) def keyword
b) creating a function
c) return keyword
d) Function inside a function
e) Recursion
f) *args
g) ** kwargs
h) Practice problems on Functions

15) List in Python

a) What is List - Definition and usage
b) List indexing and slicing
c) Mutable Lists
d) Finding min, max and sum for a given list
e) Iteration in Lists using for and while loops
f)List methods I - append, extend, pop, insert

g) List methods II - sort, reverse, clear, remove,
h) List methods III - index, count
i) List comprehension

16) Tuple in Python

a) What is Tuple? - Definition and usage
b) Tuple indexing and slicing
c) Immutable Tuple
d) Iteration in Tuple using for and while I
e) Tuple methods - index and count

17) Set in Python

a) What is Set? - Definition and usage
b) Set methods I - union, difference, difference_update
c) Set methods II - intersection, intersection _update
d) Set methods III - discard, remove, pop, add, clear, update
f) Set comprehension

18) Dictionary in Python

a) What is Dictionary? - Definition and usage
b) Iteration is dictionary using for and while loops
c) Dictionary methods I - keys, values, items
d) Dictionary methods II - get, pop,
e) Dictionary methods III - update, popitem
f) Dictionary comprehension
g) Practice problems on list, tuple, set and dictionary

19) Inbuilt functions in Python

a) Enumerate
b) zip
c) map
d) reduce
e) filter
f) lambda function
g) eval

20) Using fundamental modules in Python

a) Math Module
b) Random Module
c) OS Module

Python- Advanced

1) Exception handing

a) Difference between Errors and Exception
b) What is an Exception?
c) Understanding try-except-else blocks of code
d) finally keyword
e) Different types of exceptions
f) Generating and handling exceptions

2) File Handling

a) Opening & closing a file
b) Reading .txt files in python
c) Modes of opening a file - read, write, append
d) Writing to a file
e) Understanding file operations - read, readlines, seek, tell
f) Reading .csv file in Python
g) Data Analysis using File handing

3) Database connectivity with Sql Server

a) Installing Sql Server
b) Select statements in SqlServer
c) Understanding Fundamental Sql operations
d) Creating and deleting database
e) Creating table
f) Insert, update and Delete operations in Sql
g) Connecting Python with Sql Server
h) Creating connection with Sql server
i) Creating cursors in Sql Server
j) Executing CRUD operations using Python for data stored in table/collection

4) DateTime Module in Python

a) Working with Datetime
b) Year, Month, Date, day, time functions
c) Hour, minutes, seconds functions
d) Converting strings to Date
e) Converting date to strings
f) Calculating difference between two dates

5) Object Oriented Programming

a) Class and Objects
b) Constructor _init__
c) self keyword
d) Variables inside class - Instance and static
e) Types of Methods
    i. Instance Methods
    ii. Class methods
    iii. Static methods ,
f) Getter and setter methods
g) Understanding Inheritance
h) Types of Inheritance
    i. Single Level
    ii. Multi Level
    iii. Hierarchical
    iv. Multiple
i) super method

6) Generators and Decorators

a) yield keyword
b) next keyword
c) Understanding Generators
d) Creating decorators with @decorator_name

7) Common Python based Interview questions

Data Science

1) Statistics

a) What is Statistics?
b) What is Data?
c) Types of data
    i . Qualitative Data
    ii. Nominal and ordinal Data
    iii. Quantitative Data
    iv. Discreate and continuous
d) Population and Sample
e) Measures of Central Tendency
    i. Mean
    ii. Median
    iii. Mode
f) Measure of Dispersion
    i . Variance
    ii. Standard Deviation
    iii. Range
    iv. IQR
g) Uni-variate Data Analysis
h) Bi-variate Data Analysis
    i . Covariance
    ii. Correlation
    iii. Difference between Covariance and Correlation

2) Numpy

Numpy Array and fundamental concepts

a) Numpy Array
b) Array of zeros
c) Array of ones
d) Identity matrix
e) Shape of an array/matrix
f) Changing data type of an array
g) Linear Space and Log Space
h) Methods of Creating Numpy Array
    i. np.array()
    ii.Converting lists to array
    iii. Creating array using arrange() function
i) Reshape function of numpy array
j) Random module in numpy
    i. np.random.ranint()
    ii. np.random.random()
    iii. np.random.rand()
    iv. np.random.choice( )

Numpy Indexing and Slicing

a) Numpy indexing
    i. Indexing on 1D array
    ii. Indexing on 2D array
    iii. Indexing on 3D array
b) Numpy slicing
    i. Slicing on 1D array
    ii. Slicing on 2D array
    iii. Slicing on 3D array

Numpy Array operations

a) Operations on Numpy array
    i. Adding scalar value to each and every array value
    ii. Adding scaler values row wise
    iii. Adding scaler values column wise
    iv. Adding array of same dimentions

b) Numpy array functions
    i. np.sum() - with different axis value
    ii. np.max( )
    iii. np.min( )
    iv. np.argmin( )
    v. np.argmax( )
    vi. np.sort( )

c) Adding a new row/column to an array
d) Deleting row/column from an array
e) Iterating over numpy array using np.nditer
f) Array Flatten
g) Matrix Multiplication
h) Matrix Transpose

Linear Algebra in Numpy

a) Finding Determinant, and Trace of a Matrix
b) Finding inverse of Matrix
c) Solving Linear Equations

3) Pandas

Series in pandas

a) Importing pandas
b) What is Series?
c) Creating a Pandas series using
    i . Numpy Array
    ii. List
    iii. Tuple
    Iv . From a column of .csv/.xlsx file table
d) Series functions
    i . Mean and Median
    ii. Sum
    iii. Count
    iv. Cumsum

DataFrame in Pandas

a) What is DaraFarme?
b) Creating DataFrame using
    i. Series
    ii. Dictionary
    iii. Using lists of lists
c) head, tail, sample functions of dataframe
d) Hoc, loc functions on dataframe
e) Difference between Hoc() and loc()
f) Accessing a particular column/ series inside dataframe
g) Adding a new column/ series to a dataframe
h) Setting index and columns for a dataframe
i) Assigning a column as index
j) Queries in DataFrame
k) Filters in DataFrame
I) Sort index and sort values
m) Finding unique values for a column
n) Pandas describe and info
o) Groupby

p) Data Wrangling
    i . Merge
    ii. Merge with different joins
    iii. Append
    iv. Concat
    v. Apply
    vi. Applymap
    vi. Map
q) Data Cleansing
    i. Removing Nan values
    ii. Fill Nan values
    iii. Renaming Columns
    iv. Rearrange columns
    v. Drop rows
    vi. Drop columns
r) Handling DateTime In Pandas

Pivot table in Pandas

a) Creating pivot tables in pandas
b) Stack operation on pivot tables
c) Unstack operation on pivot tables
d) Levels in stack and unstack

4) Matplotlib

a) Importing matplotlib
b) Creating Charts In matplotlib
    i. Bar Chart
    ii. Line Chart
    iii. Pie Chart
    iv. Histogram
    v. Box Plot
    vi. Scatter Chart
    vii. Subplot

5) Sea born

a) Importing Seaborn
b) Creating charts in seaborn
    i. Count Plot
    ii. Violin Plot and Box plot
    iii. Pair Plot
    iv. Strip Plot and Swarm plot
    v. Heat Map
    vi. Join plot and scatterplot

6) EDA

a) Exploratory Data Analysis
b) 2-3 Projects on Data Analysis

Machine Learning

1) Introduction

a) What is Machine Learning?
b) Types of Learning
    i. Supervised Learning
    ii. Unsupervised Learning
c) Difference between Supervised and Unsupervised Learning

2) Data Preprocessing/Feature Engineering

a) Feature Selection method
    i. Correlation
    ii. Heatmap
b) Removing/Replacing Nan values
    i. dropna()
    ii. fillna ()
    iii. replace ()
c) Encoding categorical values
    i . Label Encoding
    ii. get_dummies()
    iii. Find and replace
d) Data Scaling
    i. What is scaling?
    ii. Implementing data scaling
e) Splitting dataset into Training and Test sets

3) Supervised Learning - Regression

a) What is Supervised Learning?
b) Algorithms in Supervised Learning
c) What is Regression?
d) Regression Metrics
    i. MSE
    ii. MAE
    iii. R MSE
e) Linear Regression
    i. Simple Linear Regression and its implementation
    ii. Multiple Linear Regression and its implementation
    iii. Creating regression models in sk-learn
    iv. Making prediction with regression
    v. SSE, SSR and SST
    vi. R-square Coefficient
f) Polynomial Regression and its implementation

4) Supervised Learning - Classification

a) What is Classification?
b) Bias and Variance
    i. What is Bias?
    ii. What is Variance?
    iii. Overfitting
    iv. Underfitting
c) Confusion Matrix and its related concepts
    i. What is Confusion Matrix?
    ii. Precision
    iii. Recall
    iv. Accuracy
    v. F - score
    vi. Sensitivity
d) Different Classification algorithms of Supervised Learning

e) Logistic Regression
    i. What is Logistic Regression?
    ii. Working of Logistic Regression
    iii. Sigmoid Function
    iv. Implementation of Logistic Regression
    v. Pros and Cons of Logistic Regression

f) Decision Tree
    i. What is Decision Tree?
    ii. Criteria in Decision Tree
    iii. Implementation of decision tree
    iv. pros and cons of decision tree

g) Random Forest
    i. What is Random Forest?
    ii. Attributes/Parameters of Random Forest
    iii. Difference between Decision Tree and Random Forest
    iv. Concept of Bootstrapping a dataset
    v. Implementation of random forest
    vi. pros and cons of random forest

h) K-NN
    i. What is K-NN?
    ii. K-NN algorithm working
    iii. Method of determining nearest neighbors
    iv . Implementation of KNN
    v. Pros and Cons of K -NN

i) Naïve Bayes
    i. What is Naïve Bayes?
    ii. Na ï ve B a ye s a lg or it h m w o r ki ng
    iii. Implementation of Naïve Bayes
    iv. Pros and cons of Naive Bayes

5) Unsupervised Learning - Clustering

a) What is Unsupervised learning?
b) What is Clustering?
c) Clustering Algorithms
d) K-Means Clustering
    i. What is K -means Clustering?
    ii. Method to determine optimal number of Clusters - Elbow method
    iii. Implementation of K -means Clustering
e) Agglomerative Clustering
    i . What is Agglomerative Clustering?
    ii. Dendograms
    iii. Implementation of Agglomerative

6) Unsupervised Learning - Dimensionality Reduction

a) What is dimensionality Reduction
b) Dimensionality Reduction - PCA
    i. Working of PCA
    ii. Covariance matrix
    iii. Eigen value and Eigen vectors
    iv. Implementation of PCA

7) Projects on ML

a) Projects on Regression, Classification and Clustering

Text Mining using NLP

1) 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

2) 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, chunk, etc.)

3) 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

Introduction to Al & DL

1) Introduction to Artificial Intelligence (AI)

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

2) Artificial Neural Network (ANN)

- 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

3) Introduction to Google Colab

- Setting up google colab
- Uploading files to Google Cola b
- Using Google colab as an alternative to Jupyter Notebook

4) Understanding different Activation Functions

- Linear
- Sigmoid
- Tanh
- ELU
- ReLU
- Leaky Relu

5) Understanding different Optimizers

- Gradient Descent
- Stochastic Gradient Descent
- Momentum
- Adagard
- Adam

6) Understanding different Loss Functions

- MSE
- MAE
- Binary CrossEntropy

7) CNN (Convolutional Neural Network)

- Working of CNN
- Convolution layer
- Kernel/filter and strides
- Pooling Layer
- Flatten layer
- Fully Connected Layer
- Image Classification using CNN
    - MNIST Image dataset classification
    - Fashion MNIST Image dataset classification

8) Projects on Deep Learning