

# Full Stack Data Science Masters

## Instructors:

Dr. Furqan Alam: Dr. Furqan Alam is a distinguished researcher and technology expert who earned his M.S.

Sudhanshu Kumar: Having 8+ years of experience in Big data, Data Science and Analytics with product ar

krish naik: Having 10+ years of experience in Data Science and Analytics with product architecture design

Ajay Kumar: I am a Senior R&D Engineer in the field of Data Science at Synopsys, where I leverage my ex

JAYANTILAL BHANUSHALI: Jayantilal Bhanushali is a data science leader with over 9 years of industry ex

Kausthab Dutta Phukan: "My name is Kausthab and I have 9 years of experience in Sales and Data Scienc

Sunny Savita: I'm an AI enthusiast, graduate in Computer science and engineering. Currently working with

Sourangshu Pal: Visual Computing Engineer and instructor at iNeuron.ai having 3 years of diverse experie

Boktiar Ahmed Bappy: This is Bappy. I aim for simplicity in Data Science. Real Creativity won't make things

## Curriculum:

### Week 0 Course Introduction

- Welcome to the Course
- Platform Overview

### Week 1 Python Basic Building

- Python Keywords and identifiers
- Comments, indentation and statements
- Variables and data types in Python
- Standard Input and Output
- Operators
- Control flow: if else elif
- Control flow: while loop
- Control flow: for loop
- Control flow: break and continue

### Week 2 Python Data Structures

- Strings
- Lists, Lists comprehension
- Tuples
- Sets
- Dictionary, Dictionary Comprehension

#### Week 3 Python Functions

- Python Built-in Functions.
- Python User-defined Functions.
- Python Recursion Functions.
- Python Lambda Functions.

#### Week 4 Python Exception Handling, Logging And Debugging

- Exception Handling Using Try Catch Block
- Custom Exception Handling
- Logging With Python
- Debugging With Python

#### Week 5 Python OOPS

- Python Objects And Classes
- Python Constructors
- Python Inheritance
- Abstraction In Python
- Polymorphism in Python
- Encapsulation in Python

#### Week 6 Flask

- Flask Fundamentals
- Building Rest API's

#### Week 7 Python Project With Deployment

- End To End Review Scraper Project With Deployment In Cloud
- Weather App- Build A Web app that displays current weather conditions for a specific location using OpenWeatherMap API
- Image web scraper- Build A Image Web Scraper which extracts images of Google

#### Milestone 1

- Milestone 1 Test

#### Week 8 Python For Data Science- Numpy

- Numpy Basics to Advance
- Key Operations using Numpy

#### Week 9 Python For Data Science- Pandas

- Pandas Basic To Advance- Dataframe And Series
- Key Operations on DataFrames

#### Week 10 Python For Visualization

- Getting Started with Matplotlib
- Getting Started with Seaborn

#### Milestone 2

- Milestone 2 Test

#### Week 11 SQL-Basic to Intermediate

- Working with MySQL Using NeuroLabs
- USE, DESCRIBE, SHOW TABLES
- SELECT
- INSERT
- UPDATE & DELETE
- CREATE TABLE
- ALTER: ADD, MODIFY, DROP
- DROP TABLE, TRUNCATE, DELETE
- LIMIT, OFFSET

- ORDER BY
- DISTINCT
- WHERE, Comparison operators, NULL
- Logical Operators
- Aggregate Functions: COUNT, MIN, MAX, AVG, SUM
- GROUP BY
- HAVING

#### Week 12 SQL- Intermediate To Advance

- Join and Natural Join
- Inner, Left, Right and Outer joins
- Sub Queries/Nested Queries/Inner Queries
- SQL Primary And Foreign Key
- SQL Function And Stored Procedures
- SQL Window Function
- CTE In SQL
- Normalization In SQL

#### Week 13 SQL Interview Questions

- Discussing FAANG SQL Interview Questions
- Discussing Other Top Product And Service Based Companies SQL Interview Questions

#### Week 14 Python With MongoDB

- MongoDB Tutorials With Various Operations- We will see how we can perform various database operations

#### Milestone 3

- Milestone 3 Test

#### Week 15 Exploratory Data Analysis - 1

- Analyzing Bike Sharing Trends.
- Analyzing Movie Reviews Sentiment.

- Customer Segmentation And Effective Cross Selling.

#### Week 16 Exploratory Data Analysis - 2

- Analyzing Wine Types And Quality.
- Analyzing Music Trends And Recommendations.
- Forecasting Stock And Commodity Prices

#### Milestone 4

- Milestone 4 Test

#### Week 17 Maths For Data Science(Linear Algebra 1)

- Linear Systems and Gaussian Elimination In this module we will learn what a matrix is and what it represents.
- Matrix- In this module, we will learn how to solve a linear system of equations with matrix algebra.

#### Week 18 Maths For Data Science(Linear Algebra 2)

- Projection And Least Square-In this module we will discuss projections and how they work. We will build on our understanding of linear algebra.
- Determinant and Eigens-In this module we will learn how to compute the determinant of a matrix. Afterwards, we will learn about eigenvectors and eigenvalues.

#### Week 19 Maths For Data Science(Probability)

- Important concepts in probability theory including random variables and independence

#### Week 20 Maths For Data Science(Calculus)

- Definition of a Derivative- What is a derivative? Calculate simple derivatives from the definition of a derivative.
- Product and Chain Rule-Use the product and chain rules to calculate the derivatives of more complicated functions.
- Using Derivatives to Graph Functions-Use where derivatives are positive and negative to help graph a function.
- Finding Maximums and Minimums-Use derivatives to find the maximum and minimum values of functions.

#### Week 21 Statistics 1

- Introduction & Descriptive Statistics- In this module, you will learn about the fundamentals of descriptive statistics.

#### Week 22 Statistics 2

- Introduction to Probability Distributions- In this module, we will cover various distributions and understand their properties.

#### Week 23 Statistics 3

- Hypothesis Testing-This module aims to equip you with the necessary knowledge to choose the appropriate statistical test for your data.

## Milestone 5

- Milestone 5 Test

## Week 24 Feature Engineering

- Feature Selection
- Handling missing values
- Handling imbalanced data
- Handling outliers
- Encoding
- Feature Scaling

## Week 25 Machine Learning (Supervised - 1)

- AI Vs ML Vs DL Vs DS
- Types Of ML Techniques
- Supervised vs unsupervised and semi-supervised and reinforcement learning
- Linear Regression
- End To End Project With Deployment

## Week 26 Machine Learning (Supervised - 2)

- Logistic Regression
- Task- End To End Project With Deployment
- Support Vector Machines
- Naive Bayes
- Task- End To End Project With Deployment

## Week 27 Machine Learning (Supervised - 3)

- Decision Tree
- Gradient Boosting
- Xgboost
- Task- End To End Project With Deployment

## Week 28 Machine Learning (Unsupervised)

- PCA
- Kmeans Clustering
- Hierarchical Clustering
- Dbscan Clustering
- Performance Metrics In Clustering

## Week 29 Machine Learning (Time Series)

- Time Series Using fbprophet
- Time Series Using AutoTs
- Time Series Using Darts

## Week 30 End To End ML Projects With Deployment

- Developing a Comprehensive Image Scraper with Python
- Machine Learning-Based Fault Prediction for Industrial Sensors End To End Project
- Developing an Advanced Review Scraper with Python and Data Visualization

## Week 31 End To End ML Projects With Deployment

- ShipSage: Machine Learning for Smart Shipment Price Prediction
- GreenVision: AI-driven Forest Cover Type Classification System
- Customer Categorizer: Leveraging Machine Learning to Uncover Hidden Market Segments
- PhishFinder: Machine Learning-Based Phishing Detection and Classification With Bento ML and MLFLOW

## Milestone 6

- Milestone 6 Test

## Week 32 Interview Preparation

- Resume Discussion And Resume Preparation
- Python Interview Questions Discussion
- Stats Interview Questions Discussion
- Machine Learning Interview Questions Discussion

- How To Explain End to Projects To Interviewer

#### Week 33 Deep Learning ANN

- Artificial Neural Network Working
- Back Propagation In ANN
- Chain Rule Of Derivatives
- Vanishing Gradient Problem
- Exploding Gradient Problem

#### Week 34 Deep Learning Fundamentals

- Different Activation functions
- Different types of Loss Function
- Different types Of Optimizers
- Weight Initialization Techniques
- Drop Out Layer
- Batch Normalization

#### Week 35 Deep Learning Frameworks

- Working With Tensorflow Keras
- Working With Pytorch

#### Week 36 Deep Learning (Computer Vision Fundamentals)

- CNN Fundamentals
- Lenet-5 Variants With Research Paper And Practical
- Alexnet Variants With Research Paper And Practical

#### Week 37 Deep Learning (Image Classification & Transfer Learning)

- Googlenet Variants With Research Paper And Practical
- Vggnet Variants With Research Paper And Practical
- Resnet Variants With Research Paper And Practical

#### Week 38 Deep Learning (Computer Vision - Object Detection)



- Object Detection(In this module we will discuss various advanced algorithms which will help us perform o

#### Week 39 Deep Learning (Computer Vision - Segmentation Tracking)

- Image Segmentation(In this module we will discuss various advanced algorithms which will help us perform
- Object Tracking (In this module we will discuss various advanced algorithms which will help us perform o

#### Week 40 Deep Learning (NLP - 1)

- NLP With Machine Learning- In this module, we will discuss how we can apply different NLP techniques i
- NLP With Recurrent Neural Network and Its variants

#### Week 41 Deep Learning (NLP - 2)

- NLP with Sequence Models- In this module, we will discuss about various Sequence Models in Deep Lea
- NLP With Attention Models- In this module, we will discuss Transformers,BERT, and GPT models

#### Week 42 End To End Deep Learning Projects With Deployment

- Developing an Audio Classification System for Accurate Speech Recognition
- Developing a Robust Helmet Detection System using Computer Vision

#### Week 43 End To End Deep Learning Projects With Deployment

- Developing an AI-Driven Text Summarization System with Deep Learning Techniques
- Developing an AI Model for Automated Lungs Disease Diagnosis Using Bento ML and MLFLOW

#### Week 44 End To End Deep Learning Projects With Deployment

- Developing a High-Quality Text-to-Speech System with Advanced NLP Techniques
- AI-Enabled Object Detection for Improved Industrial Safety

#### Milestone 7

- Milestone 7 Test

#### Week 45 Big Data - Hadoop

- Hadoop

#### Week 46 Big Data - Spark

- Spark

#### Milestone 8

- Milestone 8 Test

#### Week 47 Data Analytics - PowerBi

- PowerBI

#### Week 48 Data Analytics - Tableau

- Tableau

#### Milestone 9

- Milestone 9 Test

#### Week 49 - 52 Interview Preparation

- Resume Discussion And Resume Preparation
- Computer Vision Interview Preparation
- NLP Interview Preparation
- Internship Tasks For Deep Learning
- Mock Interview Sessions
- Industry Expert Talks
- How To Build Analytical Thinking
- Discussing Different Project Architectures
- Project Building End to END

#### Python Projects

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#### Deep Learning Projects

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