Data Science Student Roadmap

Courses Included:

1 . Python
2 .Mathematics (Maths for Data Analytics, Maths for ML & AI – Algebra, Calculus)
3. Machine Learning (ML)
4. Deep Learning (DL)
5. Image Processing
6. Natural Language Processing (NLP)
7. SQL
8.Quantitative Aptitude (Quant)
9. Logical Reasoning and Data Interpretation (LRDI)
10. VARC

Duration: 6 Months

Month 1: Python, Mathematics, SQL

Week 1:

- Python: 20%
  - Installation, setup, IDEs, syntax, basics
  - Data types, variables
  - Operators
- Mathematics: 15%
  - Basic Probability
- SQL: 20%
  - SQL Fundamentals, SQL Databases, SQL Tables
- Weekly Test - 1

Week 2:

- Python: 35%
  - Operators and Control Statements
  - Functions
- Mathematics: 30%
  - Statistics
- SQL: 35%
  - SQL Queries, SQL Views
- Weekly Test - 2

Week 3:

- Python: 50%
  - Data Structures
- Mathematics: 45%
  - Probability Distribution
- SQL: 50%
  - SQL Operators and Clauses, SQL Joins
- Weekly Test

Week 4:

- Python: 60%
  - Intermediate Topics: Object-Oriented Programming
- Mathematics: 60%
  - Inferential Statistics
- SQL: 60%
  - SQL Window Functions
- Weekly Test

Month 2: Python, Mathematics, SQL

Week 1:

- Python: 70%
  - Intermediate Topics: More on Data Structures
- Mathematics: 70%
  - System of Linear Equations, Matrices, Vectors
- SQL: 70%

SQL Keys , SQL Indexes

- Weekly Test

Week 2:

- Python: 80%
  - Advanced Topics: Recursion, advanced functions
- Mathematics: 80%
  - Derivatives, Optimization
- SQL: 80%

SQL Advanced

SQL funcrions

- Weekly Test

Week 3:

- Python: 90%
  - Complete any remaining topics and review
    Coding practice and contest
- Mathematics: 90%
  - Gradients and Gradient Descent
- SQL: 90%
  SQL projects
- Weekly Test

Week 4:

- Python: 100%
  - Final project or assignments
- Mathematics: 100%
  - Final review and assignments
- SQL: 100%
  - Final review and assignments
  - Practice (Advanced Level)
- Weekly Test

Month 3: Machine Learning, Quantitative Aptitude

Week 1:

- Machine Learning: 40%
  - Introduction to ML, Libraries (Numpy, Pandas, Matplotlib, Seaborn)
  - Exploratory Data Analysis (EDA)
- Quant: 25%
  - Speed Maths, Percentage, Profit and Loss
- Weekly Test

Week 2:

- Machine Learning: 60%
  - Univariate, Bivariate, and Multivariate Analysis
  - Feature Scaling and Engineering
  - Bias-Variance Tradeoff
- Quant: 50%
  - Simple Interest and Compound Interest, Time and Work
- Weekly Test

Week 3:

- Machine Learning: 80%
  - Linear Regression, Regularization, Ridge and Lasso Regression
  - Logistic Regression, Decision Trees
- Quant: 75%
  - Averages, Mixtures, and Allegations, Time, Speed, and Distance
- Weekly Test

Week 4:

- Machine Learning: 100%
  - Classification Trees, Entropy, Random Forest
  - K-means clustering, KNN, SVM
- Quant: 100%
  - Permutations and Combinations, Probability
- Weekly Test

Month 4: Deep Learning, LRDI VARC

Week 1:

- Deep Learning: 40%
  - Introduction to DL, Neural Network Basics
- LRDI: 25%
  - Linear Arrangement and Circular Arrangement, Line charts, Bar charts, Pie charts, and Tables
- Weekly Test

Week 2:

- Deep Learning: 60%
  - Deep Neural Networks, Regularization techniques, Hyperparameter tuning
- LRDI: 50%
  - Syllogism, Calendars, and Clocks
- Weekly Test

Week 3:

- Deep Learning: 80%
  - Convolutional Neural Networks (CNNs), Architectures (LeNet, AlexNet, VGG, ResNet, Inception)
- LRDI: 75%
  - Number and Letter Series, Non-Verbal Reasoning
- Weekly Test

Week 4:

- Deep Learning: 100%
  - Recurrent Neural Networks (RNNs), Unsupervised Learning
- LRDI: 100%
  - Blood Relations, Venn Diagram
- Weekly Test

Month 5: Image Processing, NLP

Week 1:

- Image Processing: 40%
  - Introduction, Fundamentals of Digital Images, Image Enhancement
- NLP: 40%
  - Introduction, Linguistic Essentials, Basic Text Processing
- Weekly Test

Week 2:

- Image Processing: 60%
  - Image Restoration, Geometric Transformations
- NLP: 60%
  - Statistical Methods, Text Classification and Clustering
- Weekly Test

Week 3:

- Image Processing: 80%
  - Color Image Processing, Advanced topics and projects
- NLP: 80%
  - Language Modeling, Named Entity Recognition (NER)
- Weekly Test

Week 4:

- Image Processing: 100%
  - Final review and assignments
- NLP: 100%
  - Part-of-Speech (POS) Tagging, final review and assignments
- Weekly Test

Month 6: Projects and Communication Skills

Week 1-2:

- Projects:
  - Apply all concepts learned in a comprehensive project
- Communication Skills:
  - Group Discussions (GD) practice
  - Presentation skills

Week 3-4:

- Mock Interviews:
  - Preparation and practice for technical and HR interviews
- Final review and project submissions