Data Science (6 semester)

1st Semester :

1. Basic Computer

- Introduction to Computers
- Computer Hardware and Software
- Operating Systems Basics
- File Management
- Internet Basics
- Introduction to Algorithms and Problem Solving
- MS Office

2. HTML

- Introduction to HTML
- HTML Tags and Attributes
- Semantic HTML
- HTML Forms
- HTML5 Features

3.CSS

- Introduction to CSS
- CSS Selectors
- Box Model and Layout
- CSS Flexbox
- CSS Grid

2nd Semester :

1. **Python and C Programming**

- Introduction to programming languages
- Data Types and Variables
- Control Flow and Loops
- Functions and Modules

- File Handling
- Multithreading
- OOPS

2. **Bootstrap**

- Introduction to Bootstrap
- Bootstrap Grid System
- Bootstrap Components (Navbar, Cards, Forms, etc.)
- Customizing Bootstrap
- Responsive Design with Bootstrap

3. **Basic Mathematics**

- Algebraic Expressions
- Functions and Graphs
- Differential and Integral Calculus Basics
- Matrix Algebra
- Set Theory

3rd semester (Data Exploration and visualization)

1. **Python for Data Science**

    1. Python basics

    2. Pandas

    3. Numpy

    4. Scipy

    5. Matplotlib

2. **Statistics with excel**

    1. Descriptive statistics

    2. Data Visualization

3. Understanding charts and visual conventions

3. **Power BI project for data visualization**

4th semester

1. **Statistics**

   1. Probability

   2. Distributions - Binomial,Bernoulli,Poisson, Gamma etc.

   3. Hypothesis Testing

   4. Mathematics for ML

2. **DSA - python**

   1. Introduction to Data Structures (Arrays, Linked Lists, Stacks, Queues, Trees, Graphs, etc.)

   2. Algorithm Analysis

   3. Searching and Sorting Algorithms
   4. Recursion
   5. Dynamic Programming
   6. Introduction to Big O Notation

3. Version Control (Overview)

- Introduction to Version Control
- Git Basics
- Branching and Merging
- Working with Remote Repositories (GitHub, GitLab)
- Resolving Conflicts
- Best Practices in Version Control

4. ML basics with Python

1. Introduction and types of ML
2. Supervised Learning algorithms and its types
3. Unsupervised Learning algorithms and its types
4. Creating an ML model

5th semester

- **MySQL**

- Introduction to Relational Databases
- SQL Basics (SELECT, INSERT, UPDATE, DELETE)
- Database Design and Normalization
- Joins and Subqueries
- Indexing and Optimization
- Transactions and ACID Properties

- **MongoDB**

- Introduction to NoSQL Databases
- MongoDB Basics (Documents, Collections)
- CRUD Operations in MongoDB
- Indexing and Aggregation
- Data Modeling in MongoDB
- Working with Mongoose (Object Data Modeling for Node.js)

- **R - Programming basics (Overview)**

  - Control Flow and Loops

    - Functions and Modules
    - File Handling

6th semester

Deep Learning with Python

- Neural Networks
- Model Tuning
- Deep Learning end to end project with cloud deployment - computer vision / NLP
- Big data analytics with hadoop