**FULL STACK DATA SCIENCE PRO PLANNER**

| Week | Module | Topic |
|---|---|---|
| 0 | Course introduction | Welcome to the Course |
| | | Platform Overview |
| 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 |
| 2 | Python Data Structures | Strings |
| | | Lists,Lists comprehension |
| | | Tuples |
| | | Sets |
| | | Dictionary,Dictionary Comprehension |
| 3 | Python Functions | Python Built-in Functions. |
| | | Python User-defined Functions. |
| | | Python Recursion Functions. |
| | | Python Lambda Functions. |
| 4 | Python Exception Handling, Logging And Debugging | Exception Handling Using Try Catch Block |
| | | Custom Exception Handling |
| | | Logging With Python |
| | | Debugging With Python |
| 5 | Python OOPS | Python Objects And Classes |
| | | Python Constructors |
| | | Python Inheritance |
| | | Abstraction In Python |
| | | Polymorphism in Python |
| | | Encapsulation in Python |
| 6 | Flask | Flask Fundamentals |
| | | Building Rest API's |
| 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 OpenWea |
| | | Image web scraper- Build A Image Web Scraper which extracts images of Google |
| **Milestone 1 Test** | | |
| 8 | Time and Space Complexity | Introduction to Time Complexity |
| | | Problems Demonstration |
| | | Recurrence Relation Solving |
| | | Introduction to Space Complexity |
| | | Problems Demonstration |
| 8 | Recurrison | Introduction to Recursion |
| | | Fibonacci Series using Recursion |
| | | Factorial using Recursion |
| | | Count of number of stairs using Recursion |
| | | Power function using Recursion |
| 9 | Backtracking | Subset Permutations and Combinations |
| | | Interview Problem: N-Queens |
| | | Interview Problem: Solving a Sudoko |
| | | Interview Problem: Rat in a Maze |
| 9 | Array | Introduction to Array |
| | | Memory addressing in an array |
| | | Passing an array to functions |
| 10 | Sorting Algorithms | Comparison Sort: Selection, Insertion and Bubble |
| | Searching Algorithms | Linear Search |
| | | Binary Search |
| | Practice Problems | Reversal of an array |
| | | Palidrome in an array |
| | | Missing number in an array |
| | | Lower Bound of an element |
| | | Square root of a number |
| | | Introduction to String |

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| 11 | Strings | Storage of string |
| | | Inbuild functions in string |
| | 2D Arrays | Introduction to 2D array |
| | | Storage in 2D array |
| | | Rotation of matrix |
| | | Search in 2D matrix |
| | | Prefix Sum in 2D matrix |
| 12 | Linked List | Introduction to Linked List |
| | | Insertion of a node in Linked Lists |
| | | Deletion of a node in Linked Lists |
| | | Midpoint of a node in Linked Lists |
| | Practice Problems | Merge two sorted Linked Lists |
| | | Reversing of a Linked Lists |
| | | Merge Sort of a Linked Lists |
| | | Floyd's Cycle Detection Algorithm |
| | Stack and Queue | Introduction to Stack |
| | | Stack using Arrays |
| | | Stack using Linked Lists |
| | | Introduction to Queue |
| | | Queue using Arrays |
| | | Queue using Linked List |
| | Practice problems | Valid Parenthesis |
| | | Implementation of Stack using Queue |
| | | Implementation of Queue using Stack |
| 13 | Generic Tree | Introduction to Tree |
| | | Taking a tree as input and printing |
| | | Tree traversals: Inorder, Preorder and Postorder Traversals |
| | | Revision |
| | Binary Search Tree | Introduction to Binary Tree |
| | | Binary Tree Traversals |
| | | Diameter of a Binary Tree |
| | | Introduction to Binary Search Tree |
| | | Searching a node in BST |
| | | Insertion of a node in BST |
| | | Deletion of a node in BST |
| | | Checking of BST |
| 14 | Priority Queue | Introduction to Priority Queue |
| | | Ways to implement Priority Queue |
| | | Introduction to Heaps |
| | | Introduction to Complete Binary Tree |
| | | Insert and Delete Operations in Heaps |
| | | Implementation of Priority Queue |
| | | HeapSort |
| | | Inbuilt Priority Queue |
| | HashMap | Introduction to HashMaps |
| | | Inbuilt HashMap |
| | | Hash Functions |
| | | Collision Handling Techniques |
| | | Insert and Delete Operations in HashMap |
| | | Load Factor |
| | | Rehashing |
| 15 | Graphs | Introduction to Graphs |
| | | Depth First Seach Traversal |
| | | Breadth First Search Traversal |
| | | Weighted and Directed Graphs |
| 16 | Divide and Conquer | Introduction to Divide and Conquer |
| | | Finding of maxima and minima |
| | | Sorting Algorithms: MergeSort |
| | | Sorting Algorithms: QuickSort |
| | | Finding of number of Inversions |
| | Greedy Algorithms | Introduction to Greedy Algorithms |
| | | Minimum Spanning Tree |
| | | Cycle Detection in Graphs |
| | | Kruskal's Algorithm |
| | | Prim's Algorithm |
| | | Dijksrta's Algorithm |
| | | Fractional Knapsack |
| | | Introduction to Dynamic Programming |
| | | Fibonnaci Series using Recursion, Memoization and Tabulation |

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| 17 | Dynamic Programming | Longest Common Subsequence using Recursion, Memoization and Tabulation |
| | | Edit Distance using Recursion, Memoization and Tabulation |
| | | Knapsack Problem using Recursion, Memoization and Tabulation |
| | | Sum of Subset using Recursion, Memoization and Tabulation |
| | | Catalan Number Concept |
| **Milestone 2 Test** | | |
| 18 | Python for Data Science Numpy | Numpy Basics to Advance |
| | | Key Operations using Numpy |
| 19 | Python for Data Science pandas | Pandas Basic To Advance- Dataframe And Series |
| | | Key Operations on DataFrames |
| 20 | Python For Visualization | Getting Started with Matplotlib |
| | | Getting Started with Seaborn |
| **Milestone 3 Test** | | |
| 21 | 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 |
| 22 | 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 |
| 23 | Python With Mongodb | Mongodb Tutorials With Various Operation- We will see how we can perform various database operations using Mongodb(No SQL) |
| **Milestone 4 Test** | | |
| 24 | Exploratory Data Analysis - 1 | Analyzing Google Play Store Data |
| | | Human Resources function Analysis |
| | | Student Performance Analysis |
| | | Chronic Kidney Disease Analysis |
| | | US Visa Approval Data Analysis |
| | | Holiday Package Data Analysis |
| **Milestone 5 Test** | | |
| 25 | Maths For Data Science(Linear Algebra 1) | Linear Systems and Gaussian Elimination<br>In this module we will learn what a matrix is and what it represents. We will explore how a system of linear equ |
| 26 | Maths For Data Science(Linear Algebra 1) | Matrix- In this module we will learn how to solve a linear system of equations with matrix algebra. |
| 27 | 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 a f |
| | | Determinant and Eigens-In this module we will learn how to compute the determinant of a matrix. Afterwards, E |
| 28 | Maths For Data Science(Probability) | Important concepts in probability theory including random variables and independence |
| | | Definition of a Derivative- What is a derivative? Calculate simple derivatives from the definition of a derivative. |
| 29 | Maths For Data Science(Calculus) | Product and Chain Rule-Use the product and chain rules to calculate the derivatives of more complicated funct |
| | | Finding Maximums and Minimums-Use derivatives to find the maximum and minimum values of functions. |
| 30 | Statistics 1 | Introduction & Descriptive Statistics- In this module, you will learn about the fundamentals of descriptive statistics, which include mean, median, mode, variance, and standard deviation. The module aims to demonstrate the importance of measures of central tendency and dispersion for various levels of measurement. You will gain an understanding of how these statistical tools are used to analyze and interpret data accurately. The module will cover the basics of mean, median, mode, variance, and standard deviation and provide examples of their practical applications. By the end of the module, you will be equipped with the knowledge to effectively use these measures for data analysis. |
| 31 | Statistics 2 | Introduction to Probability Distributions- In this module we will cover about various distributions and understand about pdf and pmf and cdf |
| 32 | Statistics 3 | Hypothesis Testing-This module aims to equip you with the necessary knowledge to choose the appropriate test when analyzing data and determining the relationships between them. It will provide a detailed explanation of the assumptions underlying each test and teach you how to interpret the results of a hypothesis test accurately. |
| | **Milestone 6** | **Milestone 6 Test** |

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| 33 | Feature Engineering | Feature Selection |
| | | Handling missing values |
| | | Handling imbalanced data |
| | | Handling outliers |
| | | Encoding |
| | | Feature Scaling |
| 34 | Machine Learning (Supervised - 1) | AI Vs ML Vs DL Vs DS |
| | | Types Of ML Technqiues |
| | | Supervised vs unsupervised and semi supervised and reinforcement learning |
| | | Linear Regression |
| | | End To End Project With Deployment |
| 35 | 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 |
| 36 | Machine Learning (Supervised - 3) | Decision Tree |
| | | Gradient Boosting |
| | | Xgboost |
| | | Task- End To End Project With Deployment |
| 37 | Machine Learning (Unsupervised) | Kmeans Clustering |
| | | Hierarichal Clustering |
| | | Dbscan Clustering |
| | | Performance Metrics In Clustering |
| 38 | Machine Learning (Time Series) | Time Series Using fbprophet |
| | | Time Series Using AutoTs |
| | | Time Series Using Darts |
| 39 | End To End ML Projects With Deployment | Machine Learning-Based Fault Prediction for Industrial Sensors End To End Project |
| | | Developing an Advanced Review Scraper with Python and Data Visualization |
| 40 | 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 |
| | **Milestone 7** | **Milestone 7 Test** |
| 41 | Deep Learning ANN | Artifical Neural Network Working |
| | | Back Propogation In ANN |
| | | Chain Rule Of Derivatives |
| | | Vanishing Gradient Problem |
| | | Exploding Gradint Problem |
| 42 | Deep Learning Fundamentals | Different Activation functions |
| | | Different types of  Loss Function |
| | | Different types Of Optimizers |
| | | Weight Initialization Technqiues |
| | | Drop Out Layer |
| | | Batch Normalization |
| 43 | Deep Learning Frameworks | Working With Tensorflow Keras |
| | | Working With Pytorch |
| 44 | Deep Learning (Computer Vision Fundamentsls) | CNN Fundamentals |
| 45 | Deep Learning (Image Classification & Transfer Learning) | Googlenet With Research Paper And Practical |
| | | Vggnet With Research Paper And Practical |
| | | Resnet With Research Paper And Practical |
| 46 | Deep Learning (Computer Vision - Object Detection) | Object Detection(In this module we will dicuss about various advanced algorithms which will us perform object |
| 47 | Deep Learning (Computer Vision - Segmentation Tracking | Image Segmentation(In this module we will dicuss about various advanced algorithms which will us perform im |
| | | Object Tracking (In this module we will dicuss about various advanced algorithms which will us perform object |
| 48 | Deep Learning (NLP - 1) | NLP With Machine Learning- In this module we will discuss how we can apply different NLP techniques in text |
| | | NLP With Recurrent Neural Network and Its variants |
| 49 | Deep Learning (NLP - 2) | NLP with Sequence Models- In this module we will discussion about various Sequence Models in Deep Learni |
| | | NLP With Attention Models- In this module we will discuss about transformers,BERT and GPT models |
| 50 | 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 |
| 51 | 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 Usign Bento ML and MLFLOW |
| 52 | 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 8** | **Milestone 8 Test** |
| | | Prerequisites for this course |
| | | What is prompt engineering? |

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| 53 | Introduction to Prompt Engineering | Importance of prompt engineering |
| | | Applications of prompt engineering |
| | | prompting formats |
| | | prompting Elements |
| | Basics Of Promptings | Prompting principles |
| | | Designing Prompts |
| | | Role Prompting |
| | | Parts of a Prompt |
| | | Difference in Writing prompts |
| | | Examples of Promptings |
| | | Pillars of prompts |
| | | Structuring and formatting prompts |
| | | Prompt effectiveness |
| | | Evaluation and iterative improvement |
| 54 | Large lanuage Modeling | Introduction to LLM's |
| | | What is LLM? |
| | | Understanding the fundamentals of LLM |
| | | What is the importance of using LLM models? |
| | | Familiarity with LLM models - GPT-3, GPT-4 |
| | | Architecture of GPT-3 |
| | | Flan |
| | | Falcon |
| | | LLMs that Reason and Act |
| | | Code as Reasoning |
| | **Milestone 9** | **Milestone 9 Test** |
| 55 | Data Engineering with Pyspark | Overview of PySpark and its key features |
| | | Understanding Spark Architecture |
| | | Working with RDDs (Resilient Distributed Datasets) |
| | | Basic transformations and actions on RDDs |
| | | Introduction to DataFrames and their benefits over RDDs |
| | | Creating and manipulating DataFrames |
| | | Basic SQL operations in PySpark |
| | | Aggregations and grouping in PySpark |
| 56 | Data Engineering with Pyspark | Joining DataFrames and RDDs |
| | | Handling missing data and null values in PySpark |
| | | Introduction to PySpark Streaming |
| | | Setting up and running PySpark Streaming jobs |
| | | Building real-time data processing pipelines with PySpark Streaming |
| | | Deploying PySpark applications on clusters |
| | | Monitoring and optimizing PySpark performance |
| | | Managing and maintaining PySpark clusters |
| 57 | PowerBI - Self Paced Module | What is BI? |
| | | What is Data Visualization |
| | | Data Visualization Preview |
| | | Data Visualization Benefits |
| | | What is Power BI? |
| | | System requirements |
| | | Power BI Product suite |
| | | Power BI Components |
| | | Power BI Desktop |
| | | Power BI Pro |
| | | Power BI Premium |
| | | Power BI desktop Installation |
| | | Desktop UI |
| | | Power BI on Mac |
| | | Tiles |
| | | Visualizations |
| | | Datasets |
| | | Reports |
| | | Dashboards |
| | | Get data |
| | | Refresh data |
| | | Introduction to Visualizations |
| | | Column Chart |
| | | Stacked Column Chart |
| | | Clustered Column Chart |
| | | 100 % Stacked Column Chart |
| | | Bar Chart |
| | | Stacked Bar Chart |

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| Clustered Bar Chart |
| 100 % Stacked Bar Chart |
| Format visuals |
| Format report page |
| Line Chart |
| Area Chart |
| Drill up and down |
| Line and Stacked Column Chart |
| Line and Clustered Column Chart |
| Pie Chart |
| Donut Chart |
| Difference between Pie Chart and Donut Chart |
| Include |
| Exclude |
| Funnel Chart |
| Ribbon Chart |
| Waterfall Chart |
| Card |
| Number Card |
| Text Card |
| Date Card with relative filtering |
| Multi-row card |
| Formatting Cards |
| Creating a table |
| Formatting a table |
| Conditional formatting and aggregation |
| Creating a matrix |
| Formatting a matrix |
| Hierarchies and Drill function in Matrix |
| Conditional formatting and Number formatting in Matrix |
| Aggregation, Total and Sub-total in Matrix |
| Scatter Plot |
| Bubble Plot |
| Dot Plot |
| Clustering |
| Play Axis |
| Treemap |
| Gauge |
| Filters on Visualization |
| Filters on Current page |
| Filters on all pages |
| Hide/unhide Filters pane |
| hide/unhide applied Filters |
| Lock/unlock applied Filters |
| Format Filters pane |
| Number Slicer |
| Text Slicer |
| Date Slicer |
| Formatting Slicers |
| Special features |
| Types of maps |
| Creating Maps |
| Formatting Maps |
| Geohierarchy and Drilling |
| Import the visual |
| Work on it |
| Sunburst Chart |
| Sankey |
| Chord |
| Infographic |
| Animated Bar Chart Race |
| Word cloud |
| Play Axis |
| Scroller |
| Drill down donut chart |
| Lipstick Column Chart |
| Lollipop Column Chart |
| Settings |
| Formatting |

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| | | Image |
| | | Text |
| | | Shape |
| | | Button |
| | | Web URL |
| | | Page navigation |
| | | Bookmark action / navigation |
| | | Datatypes and UI |
| | | Text functions - Part 1 |
| | | Text functions - Part 2 |
| | | Text functions - Part 3 |
| | | Text functions - Part 4 |
| | | Number functions - Part 1 |
| | | Number functions - Part 2 |
| | | Date and Time functions - Part 1 |
| | | Date and Time functions - Part 2 |
| | | Column from Examples - Part 1 |
| | | Column from Examples - Part 2 |
| | | Conditional columns - Part 1 |
| | | Conditional columns - Part 2 |
| | | Appending files - Part 1 |
| | | Appending files - Part 2 |
| | | Merging files - Part 1 |
| | | Merging files - Part 2 |
| | | Fill down and Transpose |
| | | Unpivot Columns |
| | | Group by |
| | | Remove/Keep rows, Columns |
| | | Introduction to M Language |
| | | Basics of M Language |
| | | Date and time functions |
| | | Text functions |
| | | M code and all the functions |
| | | Q & A - Part 1 |
| | | Q & A - Part 2 |
| | | Bins and Histogram |
| | | Lists and Histogram (Custom) |
| | | Introduction |
| | | Measures vs Calculated Columns |
| | | Text Functions |
| | | Date Time Functions |
| | | Logical Functions |
| | | Create a report |
| | | Create Power BI Service account and Publish report |
| | | Comment on, share, edit and Export report |
| | | Subscriptions, Create dashboard |
| | | Refresh and Automatic refresh |
| | | Difference between Dashboard and Report |
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PW Web/App - https://smart.link/7wwosivoicgd4
Library- https://smart.link/sdfez8ejd80if