

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 OpenWeatherMap API 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	Recursion	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 Sudoku 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 Palindrome in an array Missing number in an array Lower Bound of an element Square root of a number
		Introduction to String

11	Strings	Storage of string
		Inbuilt functions in string
	2D Arrays	Introduction to 2D array
		Storage in 2D array
		Rotation of matrix
		Search in 2D matrix
12	Linked List	Prefix Sum in 2D matrix
		Introduction to Linked List
		Insertion of a node in Linked Lists
		Deletion of a node in Linked Lists
	Practice Problems	Midpoint of a node in Linked Lists
		Merge two sorted Linked Lists
		Reversing of a Linked Lists
		Merge Sort of a Linked Lists
	Stack and Queue	Floyd's Cycle Detection Algorithm
		Introduction to Stack
		Stack using Arrays
		Stack using Linked Lists
	Practice problems	Introduction to Queue
		Queue using Arrays
		Queue using Linked List
13	Generic Tree	Valid Parenthesis
		Implementation of Stack using Queue
		Implementation of Queue using Stack
		Introduction to Tree
	Binary Search Tree	Taking a tree as input and printing
		Tree traversals: Inorder, Preorder and Postorder Traversals
		Revision
		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
15	Graphs	Rehashing
		Introduction to Graphs
		Depth First Search 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
		Dijkstra's Algorithm
		Fractional Knapsack
		Introduction to Dynamic Programming
		Fibonacci Series using Recursion, Memoization and Tabulation

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
22	SQL Intermediate To Advance	GROUP BY
		HAVING
		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
23	Python With Mongoddb	CTE In SQL
		Normalization In 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 In this module we will learn what a matrix is and what it represents. We will explore how a system of linear equations can be solved using matrix algebra.
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 foundation of linear algebra to explore how projections can be used to solve problems in data science.
28	Maths For Data Science(Probability)	Determinant and Eigens-In this module we will learn how to compute the determinant of a matrix. Afterwards, we will explore how eigenvectors and eigenvalues can be used to solve problems in data science.
29	Maths For Data Science(Calculus)	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.
30	Statistics 1	Product and Chain Rule-Use the product and chain rules to calculate the derivatives of more complicated functions.
		Finding Maximums and Minimums-Use derivatives to find the maximum and minimum values of functions.
31	Statistics 2	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.
		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

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 Techniques
		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
		Hierarchical Clustering
		DbSCAN Clustering
		Performance Metrics In Clustering
		Time Series Using fbprophet
38	Machine Learning (Time Series)	Time Series Using AutoTs
		Time Series Using Darts
		Machine Learning-Based Fault Prediction for Industrial Sensors End To End Project
39	End To End ML Projects With Deployment	Developing an Advanced Review Scraper with Python and Data Visualization
		ShipSage: Machine Learning for Smart Shipment Price Prediction
40	End To End ML Projects With Deployment	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	Artificial Neural Network Working
		Back Propagation In ANN
		Chain Rule Of Derivatives
		Vanishing Gradient Problem
		Exploding Gradient Problem
42	Deep Learning Fundamentals	Different Activation functions
		Different types of Loss Function
		Different types Of Optimizers
		Weight Initialization Techniques
		Drop Out Layer
		Batch Normalization
43	Deep Learning Frameworks	Working With Tensorflow Keras
		Working With Pytorch
44	Deep Learning (Computer Vision Fundamentals)	CNN Fundamentals
		GoogLeNet With Research Paper And Practical
		VggNet With Research Paper And Practical
45	Deep Learning (Image Classification & Transfer Learning)	ResNet With Research Paper And Practical
46	Deep Learning (Computer Vision - Object Detection)	Object Detection(In this module we will discuss about various advanced algorithms which will us perform object
		Image Segmentation(In this module we will discuss about various advanced algorithms which will us perform im
47	Deep Learning (Computer Vision - Segmentation Tracking)	Object Tracking (In this module we will discuss about various advanced algorithms which will us perform object
		NLP With Machine Learning- In this module we will discuss how we can apply different NLP techniques in text
48	Deep Learning (NLP - 1)	NLP With Recurrent Neural Network and Its variants
		NLP with Sequence Models- In this module we will discussion about various Sequence Models in Deep Learning
49	Deep Learning (NLP - 2)	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 Lung Disease Diagnosis Using BERT ML and MFLow
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?

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
56	Data Engineering with Pyspark	Aggregations and grouping in 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
57	PowerBI - Self Paced Module	Monitoring and optimizing PySpark performance
		Managing and maintaining PySpark clusters
		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

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

PW Web/App - <https://smart.link/7wwosivoicgd4>
Library- <https://smart.link/sdfez8eid80if>