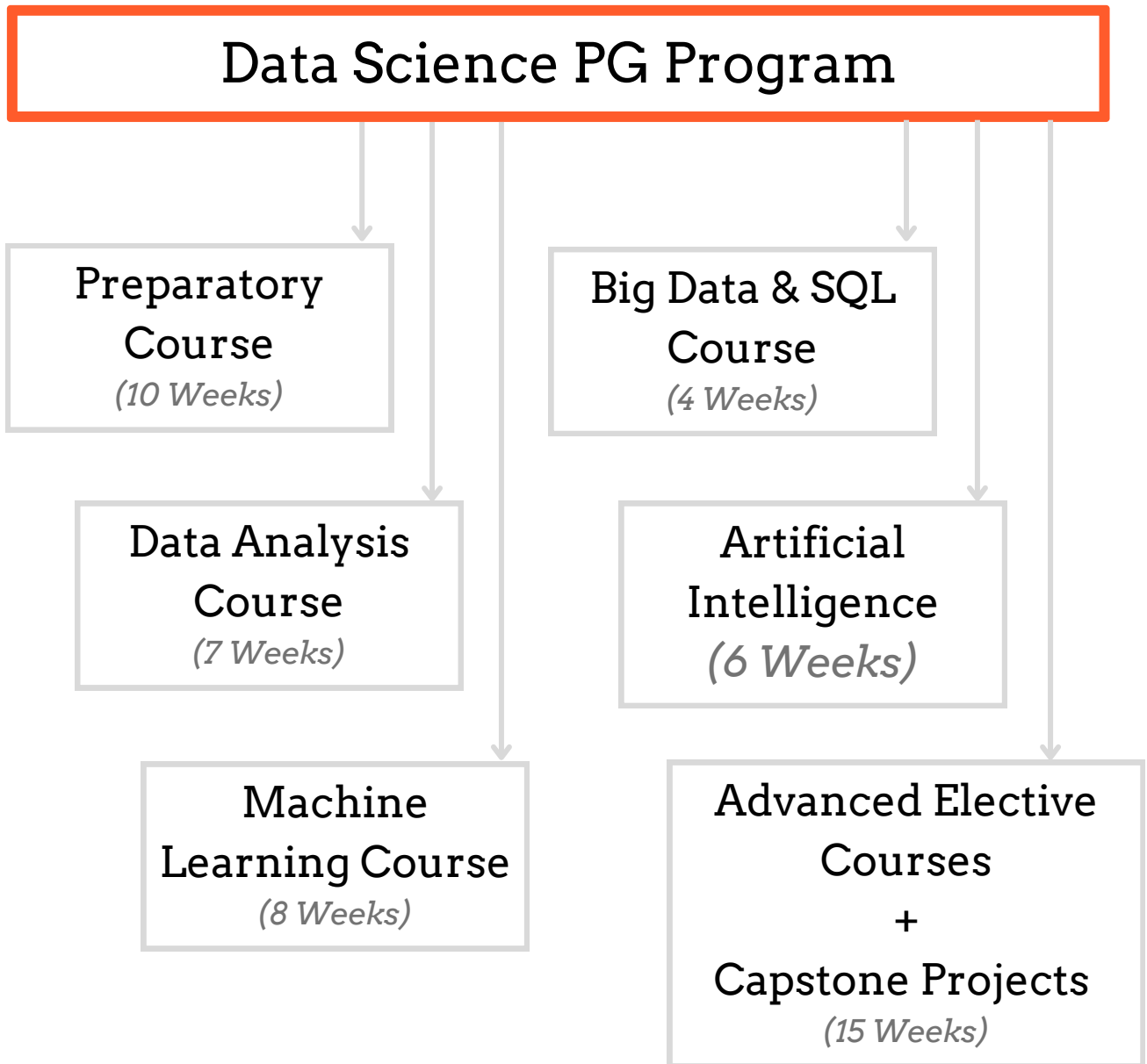# MERITSHOT

Program Delivery Plan

Data Science PG Program

A Complete timeline guide for the 12 Months Data Science & AI PG Program offered at Meritshot

Course Outline

Data Science PG Program

Preparatory Course
(10 Weeks)

Data Analysis Course
(7 Weeks)

Machine Learning Course
(8 Weeks)

Big Data & SQL Course
(4 Weeks)

Artificial Intelligence
(6 Weeks)

Advanced Elective Courses + Capstone Projects
(15 Weeks)

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Preparatory Course

Introduction to Excel for Data Analytics

Week 1	Weekends	Statistical and Mathematical Functions, Conditional Formatting
	Weekdays	Mathematics for Data Analysis and Science.
Week 2	Weekends	Lookup, Index & Match, Logical, Text Functions, Pivot Tables
	Weekdays	Introduction to Inferential Statistics
Week 3	Weekends	Data Cleaning, What if analysis, Scenario Management.
	Weekdays	Introduction to Power Query
Week 4	Weekends	Charts, Dashboards, Regression, and Forecasting
	Weekdays	Introduction to Macros

Preparatory Course

Introduction to Tableau and Power BI

Week	Schedule	Topics
Week 1	Weekends	Introduction to Tableau, Charts and Maps, Fundamentals of Data Visualization and Reporting.
	Weekdays	Introduction to Data Cleaning and Preparation using Power BI
Week 2	Weekends	Introduction to Calculated Fields, Table Calculations, Aggregations, Granularity and LOD Expressions.
	Weekdays	Introduction to Feature Engineering and Data Modelling in Power BI.
Week 3	Weekends	Introduction to Data Extracts, Filters, Tableau Dashboards, Tableau Storyboards, and Formatting.
	Weekdays	Introduction to Charts, Maps, and Dashboards in Power BI.

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Preparatory Course

Introduction to Python and R Programming

Week 1	Weekends	Variables, Operators, Strings, Datatypes, and Data Structures such as Lists, Tuples, Dictionaries, and Sets.
	Weekdays	Introduction to Fundamentals of R Programming Language.
Week 2	Weekends	Functions, Parameters, Arguments, Anonymous Functions, Strings, String Methods, Regular Expressions
	Weekdays	Introduction to Statistical Analysis and Functions in R Programming.
Week 3	Weekends	Introduction to Loops, Conditionals, Break, Continue, Object Oriented Concepts, and Space-Time Complexity.
	Weekdays	Introduction to Data Visualization using ggplot in R Programming.

Data Analysis Course

Statistics and Hypothesis Testing

Week 1	Weekends	Descriptive Statistics, Basic and Conditional Probability
	Weekdays	EDA, and Data Preparation using SAS
Week 2	Weekends	Introduction to Inferential Statistics and Hypothesis Testing
	Weekdays	Using SQL Queries in SAS

Data Analysis and Visualization

Week 1	Weekends	Introduction to Numpy and Pandas
	Weekdays	Query Analysis using Pandas
Week 2	Weekends	Introduction to Matplotlib and Seaborn
	Weekdays	Introduction to Plotly and Express

Data Analysis Course

Introduction to Data Cleaning, Preparation, Processing

Week 1	Weekends	Dealing with Missing Values, Dealing with Outliers and Skewness, and Encoding Categorical Data
	Weekdays	Case Study on Credit Risk Estimation using Data Analysis and Visualization.
Week 2	Weekends	Introduction to Data Manipulation Functions, Statistical Transformations, and Feature Engineering.
	Weekdays	Case Study on Data Cleansing and Enrichment for a Job Portal
Week 3	Weekends	Introduction to Sampling and Resampling Techniques, Introduction to Feature Scaling Techniques.
	Weekdays	Case Study on Statistical Distributions to remove skewness from the Data.

Machine Learning Course

Introduction to Supervised Learning

Week 1	Weekends	Introduction to Linear and Logistic Regression.
	Weekdays	Regularization Techniques such as Lasso, Ridge, Elastic Net.
Week 2	Weekends	Introduction to KNN, SVM, and Naive Bayes Theorem.
	Weekdays	Implementation of Regression Algorithms in Real world Datasets.
Week 3	Weekends	Introduction to Decision Trees and Random Forests.
	Weekdays	Implementation of Classification Algorithms in Real world Datasets.
Week 4	Weekends	Introduction to Boosting Algorithms, and Imbalanced Machine Learning.
	Weekdays	Introduction to Advanced Modelling Techniques.

Machine Learning Course

Introduction to Unsupervised Learning

Week 1	Weekends	Introduction and Implementation of K Means and Hierarchical Clustering.
	Weekdays	Evaluation Metrics for Unsupervised Learning.
Week 2	Weekends	Introduction and Implementation of PCA and LDA.
	Weekdays	Case Study on Dimensionality Reduction.

Time Series and Recommender Systems

Week 1	Weekends	Time Series Fundamentals, AR, MA, ARMA, ARIMA, SARIMA, ARIMAX etc.
	Weekdays	Implementation of Time Series Algo.
Week 2	Weekends	Content & Collaborative based Filtering.
	Weekdays	Implementation of Recommender Systems.

Big Data and SQL Course

SQL Databases and Big Data Analysis

Week 1	Weekends	Database Fundamentals, DDL, DML, DQL Queries.
	Weekdays	Fundamentals of MongoDB: Documents and Collections.
Week 2	Weekends	SQL Joins, Sub-Queries, Set Operations, and Writing Complex Queries.
	Weekdays	Introduction to MongoDB Replica sets, Sharding and Indexes.
Week 3	Weekends	Accessing and Loading Databases and Performing Query Analysis in Python.
	Weekdays	Fundamentals of Web Scraping.
Week 4	Weekends	Introduction to Pyspark in Python, and Spark for Big Data Analysis.
	Weekdays	Introduction to Beautiful Soup and Scrapy.

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Artificial Intelligence

Deep Learning, Natural Language Processing, & Generative AI.

Week 1 & 2	Weekends	Introduction to Neural Networks, Back Propagation, ANN and CNN.
	Weekdays	Fundamentals of CNN Architectures and Introduction to RNN
Week 3 & 4	Weekends	Introduction to Text Processing, Text Cleaning, and Text Extraction Methods.
	Weekdays	Introduction to ML, and DL Models for Text Classification.
Week 5	Weekends	Introduction to Text Summarization, Named Entity Recognition.
	Weekdays	Introduction to Advanced Text Models and Modelling Strategies.
Week 6	Weekends	Introduction to Chatbots, and Generative AI.
	Weekdays	Artificial Intelligence Capstone Project.

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Industry Projects and Case Studies

Projects with Domain Specialization

You can choose to go with any one of the Domains to build your Portfolio Projects, But anyways you can choose to work on all the Domains for your Project Portfolio.

The Project Sessions with Domain Specialization will be completely guided by Domain Expert Data Scientists in a step by step manner, Where you will not only get to learn the practical concepts but also the Domain related theories to complete the project.

For Practice, you will get to work on Homework Projects. You will be given an Objective and a Problem statement on which you will have to prepare a solution using your preferred Tools and Technologies.

You will get personalized Evaluation and Feedbacks on your Homework Projects from Industry Experts.

Industry Projects and Case Studies

Projects with Domain Specialization

Banking, Finance, Insurance
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1. Customer Churn Analysis
2. Risk and Reward Analysis
3. Stock Market Analysis
4. Fraud Analysis

Healthcare
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1. Payer and Provider Analytics
2. Pharmaceutical Analytics
3. Health Expenses Analysis
4. Drugs Prescription Analysis

Ecommerce & Marketing
----

1. Customer LTV Analysis
2. Ad Campaigns Analysis
3. Market Basket Analysis
4. Dynamic Pricing Analysis

HR & Operations
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1. Employee Attrition Analysis
2. Employee Promotion Analysis
3. Productivity Analysis
4. Resources Optimization

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Industry Projects and Case Studies

Homework Projects for Personalized Evaluation & Feedbacks

Keyword analysis and generation for google ads
Optimize search engine marketing campaigns by identifying relevant keywords for Google Ads to improve ad targeting and increase visibility, clicks, and conversions.

Quora Insincere Questions Classification analysis
Enhance content moderation on Quora by using ML algorithm to classify and filter out insincere questions to maintain the integrity of the platform and provide a better user experience.

Cabs Trip and Travelling duration Prediction
Predict the duration of cab trips using machine learning to optimize route planning, improve customer satisfaction, and enhance operational efficiency in the transportation industry.

Climate Change Impact on Global Food Supply Chain
Frequent Climate change and irregularities are big challenging environmental issues. These irregularities in climate divisions are drastically affecting the human lives residing on the Earth

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Industry Projects and Case Studies

Homework Projects for Personalized Evaluation & Feedbacks

Product Prices Suggestions for Online Sellers
Provide online sellers with data-driven price suggestions using machine learning to optimize pricing strategies, increase sales, and maximize profits in the competitive e-commerce market.

Demand Forecasting for an Ecommerce Giant
Forecast demand for a giant ecommerce, enabling effective inventory management, reducing stockouts and overstocks, customer satisfaction, and optimizing supply chain operations.

Recommend products to most suitable customers
Utilize personalized recommendations based on user behavior and preferences using ML to improve user experience, increase engagement, and drive sales.

Traffic Signs Classification using CNN
Accurately classify traffic signs using ML to enhance road safety, assist in autonomous driving, and improve traffic management and enforcement in transportation systems.

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Advanced Elective Courses

Introduction to Model Deployment

Week 1	Weekends	Overview of Model Deployment , ML System Architecture, Packaging ML Model for Production.
	Weekdays	Fundamentals of REST APIs.
Week 2	Weekends	Serving and Deploying the Model via REST API, Continuous Integrations, and Deployment Pipelines
	Weekdays	Fundamentals of AWS, AWS S3, and AWS EC2.
Week 3	Weekends	Deploying ML API with Containers, Differential Testing, Deploying to IaaS (AWS EC2).
	Weekdays	Deployment of a Machine Learning Classification Model.

Advanced Elective Courses

Introduction to
Natural Language Processing Projects

Week	Period	Topic
Week 1	Weekends	Projects on Natural Language Processing, Part of Speech Tagging, Named Entity Recognition
	Weekdays	Fundamentals of Text Data Cleaning
Week 2	Weekends	Projects on Text Classification, Semantics Rule, and Fundamentals of Sentimental Analysis.
	Weekdays	Working on Real-world Text Classification problem
Week 3	Weekends	Understanding the Complex concepts of Topic Modeling and Text Summarization Techniques.
	Weekdays	Working on Real-world Topic Modeling problem

Advanced Elective Courses

Introduction to Deep Learning Projects

Week 1	Weekends	Projects on Artificial Neural Networks
	Weekdays	Fundamentals of Tensorflow
Week 2	Weekends	Projects on Convolutional Neural Networks and CNN Architectures
	Weekdays	Fundamentals of PyTorch

> After the completion of the Program, You will get to test your knowledge through the Final Exam which will cover practical and theoretical questions from all the Topics.

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