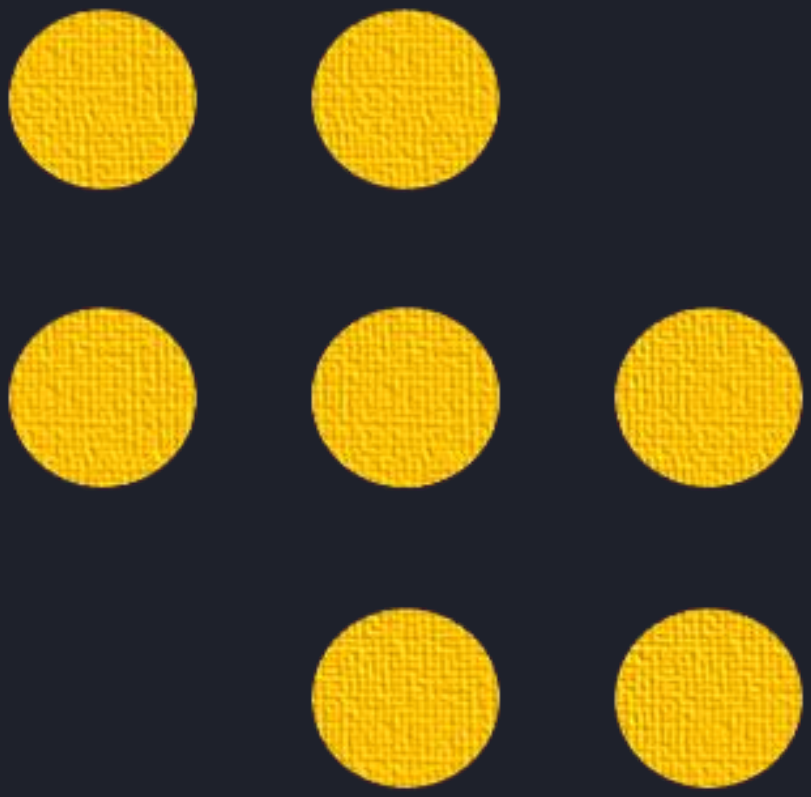
FIGURESHUB



DATA SCIENCE SYLLABUS

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Data Science Syllabus

COURSE OVERVIEW

Welcome to the 6-month Data Science program! This immersive journey is crafted to empower you with the skills and knowledge essential for success in the ever-evolving field of data science. Whether you're a beginner taking your first steps into this exciting domain or an experienced professional looking to deepen your understanding, this program is tailored to accommodate individuals with diverse backgrounds.

REQUIREMENTS

- No prior mobile development experience is required.
- A fully functional laptop that is able to access the internet.
- Minimal hardware requirements for laptop: [core i5, 256 SSD, and 16Gb of RAM]

RESOURCES

Python, R, Jupyter Notebooks, Google Colab, RStudio, Git, GitHub, etc.

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COURSE CURRICULUM

WEEK	CONTENT
Week 1-2	• Overview of Data Science and its applications • Basics of Python programming for data science • Introduction to Jupyter notebooks
Week 3-4	• Data cleaning and preprocessing • Exploratory Data Analysis (EDA) techniques • Introduction to Pandas and NumPy **Project 1: Data Cleaning and Exploration** • Work with a real-world dataset • Clean and preprocess the data • Perform exploratory data analysis to gain insights
Week 5-6	**Statistical Analysis with Python** • Descriptive statistics and inferential statistics • Hypothesis testing • Probability distributions
Week 7-8	**Introduction to Machine Learning** • Supervised and unsupervised learning • Model training and evaluation • Scikit-Learn for machine learning in Python **Project 2: Predictive Modeling** • Apply regression or classification algorithms on a dataset • Evaluate model performance using relevant metrics
Week 9-10	**Advanced Supervised Learning** • Decision Trees and Ensemble methods • Feature engineering • Model tuning and optimization

Week 11-12	**Unsupervised Learning and Dimensionality Reduction** • Clustering algorithms (K-Means, Hierarchical) • Dimensionality reduction techniques (PCA) **Project 3: Clustering and Dimensionality Reduction** • Apply clustering algorithms on a dataset • Implement dimensionality reduction techniques • Visualize and interpret results
Week 13-14	**Introduction to Neural Networks** • Basics of artificial neural networks • Building and training simple neural networks with TensorFlow/Keras
Week 15-16	**Convolutional and Recurrent Neural Networks** • Image recognition with CNNs • Sequence modeling with RNNs and LSTMs **Project 4: Deep Learning Project** • Develop a neural network model for image classification or sequence prediction • Fine-tune hyperparameters and evaluate model performance
Week 17-18	**Introduction to Big Data** • Understanding distributed computing • Basics of Hadoop and Spark
Week 19-20	**Data Engineering with SQL and NoSQL Databases** • SQL fundamentals • Introduction to MongoDB and other NoSQL databases **Project 5: Big Data Processing** • Work on a large dataset using Hadoop or Spark • Implement data engineering tasks with SQL and/or NoSQL databases

Week 21-22	**Capstone Project Planning** • Define a real-world problem • Plan the data science project lifecycle
Week 23-24	**Model Deployment and Documentation** • Deploying machine learning models in production • Creating documentation for models and projects **Capstone Project: End-to-End Data Science Project** • Apply all learned concepts to solve a real-world problem • Develop and deploy a complete data science solution

ADDITIONAL INFORMATION

Our Data Science course not only provides a robust curriculum but also emphasizes mentorship and community collaboration. With dedicated instructors and a vibrant learner community, you'll benefit from personalized guidance and industry insights. Enjoy lifetime access to resources, exclusive webinars, and continuous support for a successful learning journey. Receive a completion certificate and join a data science community that values your success.