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# Data Science Pro: The 10-Week Mastery Syllabus

This is the exact roadmap we follow to transform you into a Data Science Professional. Every week includes a **theoretical deep-dive** and a **hands-on lab**.

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## Phase 1: The Foundation (Weeks 1-2)

- **Week 1: The Pro Environment & Big Data Basics**
    - Installing the "Science Stack": Anaconda, Jupyter, and VS Code.
    - Mastering **NumPy**: The engine behind all Python data.
    - *Lab*: Building a high-performance vector calculator.
  - **Week 2: Data Wrangling with Pandas**
    - The "Alchemist" Skill: Cleaning, filtering, and merging messy datasets.
    - Handling missing values and outliers like a pro.
    - *Lab*: Analyzing a 10-year retail sales dataset.
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## Phase 2: Visual Intelligence & Stats (Weeks 3-4)

- **Week 3: Exploratory Data Analysis (EDA) & Visualization**
    - Telling stories with **Seaborn** and **Matplotlib**.
    - Identifying correlations and hidden patterns in data.
    - *Lab*: Visualizing global climate trends.
  - **Week 4: The Statistics of Success**
    - Probability, Distributions, and Hypothesis Testing for business.
    - Understanding the "Why": Why models fail and how to fix them.
    - *Lab*: A/B testing a website's conversion rate.
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## Phase 3: The Machine Learning Engine (Weeks 5-7)

- **Week 5: Supervised Learning I: Regression**
  - Linear and Multiple Regression: Predicting continuous values.
  - The Bias-Variance Tradeoff: Balancing accuracy and flexibility.
  - *Lab*: Predicting housing prices based on city data.
- **Week 6: Supervised Learning II: Classification**
  - Logistic Regression, KNN, and Decision Trees.
  - Evaluation Metrics: Precision, Recall, and the F1-Score.
  - *Lab*: Building a "Spam vs. Ham" email classifier.
- **Week 7: Ensemble Methods & Optimization**
  - The Power of the Crowd: **Random Forests** and **Gradient Boosting**.
  - Hyperparameter Tuning: Squeezing every drop of accuracy out of your models.



- *Lab*: Predicting customer churn for a telecom company.
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#### **Phase 4: Advanced Horizons (Weeks 8-9)**

- **Week 8: Unsupervised Learning & Clustering**
    - K-Means Clustering and PCA (Principal Component Analysis).
    - Finding groups you didn't know existed.
    - *Lab*: Segmenting a customer base for targeted marketing.
  - **Week 9: Natural Language Processing (NLP) & Deployment**
    - Analyzing sentiment and text data.
    - Deploying your model as a web app using **Streamlit**.
    - *Lab*: Building a live Sentiment Analysis Dashboard.
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#### **Phase 5: The Grand Finale (Week 10)**

- **Week 10: The Capstone Project – Predictive Market Analyzer**
    - Connecting to a live API to fetch real-world financial or social data.
    - Building a complete end-to-end pipeline (Clean -> Analyze -> Predict -> Visualize).
    - **Graduation**: Final code review and Portfolio presentation.
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