

Learning Schedule for : Data Science

Duration : 7 months

Learning Style : Interactive

"The best way to get started is to quit talking and begin doing." – Walt Disney

Month 1: Foundations of Data Science

1. Week 1:

- Main topics to cover: Introduction to Data Science, Python basics, Data types and structures
- Practical exercises: Installing Python, basic data type operations, data structures such as lists and dictionaries

2. Week 2:

- Main topics to cover: Data Preprocessing, Data Visualization
- Practical exercises: Importing libraries, data cleaning, visualization using Matplotlib and Seaborn

3. Monthly Project:

- Description: Cleaning and visualizing a sample dataset
- Skills applied: Python basics, data preprocessing, data visualization

- Estimated time: 4 hours

4. Monthly milestone: Understand the basics of Python and data preprocessing

5. Self-assessment task: Complete exercises on DataCamp or Kaggle to reinforce understanding of Python basics

Month 2: Statistics and Probability

6. Week 1:

- Main topics to cover: Descriptive Statistics, Inferential Statistics
- Practical exercises: Calculating mean, median, mode, and standard deviation, understanding probability distributions

7. Week 2:

- Main topics to cover: Hypothesis Testing, Confidence Intervals
- Practical exercises: Implementing hypothesis testing, calculating confidence intervals

8. Monthly Project:

- Description: Analyzing a dataset using statistical methods
- Skills applied: Statistical concepts, data analysis
- Estimated time: 6 hours

9. Monthly milestone: Understand statistical concepts and their application in data analysis

10. Self-assessment task: Complete exercises on Stat Trek or Khan Academy to reinforce understanding of statistics and probability

Month 3: Machine Learning Fundamentals

11. Week 1:

- Main topics to cover: Supervised Learning, Unsupervised Learning
- Practical exercises: Implementing linear regression, clustering algorithms

12. Week 2:

- Main topics to cover: Model Evaluation, Overfitting
- Practical exercises: Evaluating models using metrics, implementing regularization techniques

13. Monthly Project:

- Description: Building a simple machine learning model using scikit-learn
- Skills applied: Machine learning fundamentals, model evaluation
- Estimated time: 8 hours

14. Monthly milestone: Understand machine learning fundamentals and model evaluation

15. Self-assessment task: Complete exercises on Kaggle or Scikit-learn documentation to reinforce understanding of machine learning

Month 4: Advanced Machine Learning Topics

16. Week 1:

- Main topics to cover: Neural Networks, Deep Learning
- Practical exercises: Implementing neural networks using TensorFlow or Keras

17. Week 2:

- Main topics to cover: Natural Language Processing, Reinforcement Learning
- Practical exercises: Implementing NLP using NLTK or spaCy, understanding reinforcement learning concepts

18. Monthly Project:

- Description: Building a deep learning model using TensorFlow or Keras
- Skills applied: Advanced machine learning topics, deep learning
- Estimated time: 10 hours

19. Monthly milestone: Understand advanced machine learning topics and deep learning

20. Self-assessment task: Complete exercises on TensorFlow or Keras documentation to reinforce understanding of deep learning

Month 5: Data Visualization and Communication

21. Week 1:

- Main topics to cover: Data Visualization Best Practices, Matplotlib and Seaborn
- Practical exercises: Creating visualizations using Matplotlib and Seaborn

22. Week 2:

- Main topics to cover: Data Storytelling, Communication
- Practical exercises: Creating a data story using visualization and communication techniques

23. Monthly Project:

- Description: Creating a data visualization dashboard using Dash or Tableau
- Skills applied: Data visualization, communication, data storytelling
- Estimated time: 12 hours

24. Monthly milestone: Understand data visualization best practices and data storytelling

25. Self-assessment task: Complete exercises on DataCamp or Kaggle to reinforce understanding of data visualization

Month 6: Big Data and Distributed Computing

26. Week 1:

- Main topics to cover: Introduction to Big Data, Hadoop
- Practical exercises: Setting up a Hadoop cluster, understanding MapReduce

27. Week 2:

- Main topics to cover: Spark, Distributed Computing
- Practical exercises: Implementing Spark, understanding distributed computing concepts

28. Monthly Project:

- Description: Analyzing a large dataset using Big Data tools
- Skills applied: Big Data, distributed computing, Spark
- Estimated time: 14 hours

29. Monthly milestone: Understand Big Data concepts and distributed computing

30. Self-assessment task: Complete exercises on edX or Coursera to reinforce understanding of Big Data and distributed computing

Month 7: Capstone Project

31. Week 1-4:

- Main topics to cover: Working on a capstone project applying data science skills
- Practical exercises: Implementing data science skills on a real-world project

32. Monthly Project:

- Description: Completing a capstone project applying data science skills
- Skills applied: All data science skills learned throughout the 7 months

- Estimated time: 40 hours

33. Monthly milestone: Complete a capstone project applying data science skills

34. Self-assessment task: Reflect on the learning journey, identify areas for improvement, and plan for future learning

Key Milestones :

35. Understanding Python basics and data preprocessing (Month 1)

36. Understanding statistical concepts and their application in data analysis (Month 2)

37. Building a simple machine learning model using scikit-learn (Month 3)

38. Completing a capstone project applying data science skills (Month 7)

Advanced Topics (for latter part of the learning period) :

39. Topic 1: Advanced Deep Learning

- Subtopics: Transfer learning, generative models, attention mechanisms
- Resources: TensorFlow or Keras documentation, research papers

40. Topic 2: Specialized Machine Learning Topics

- Subtopics: Reinforcement learning, natural language processing, computer vision
- Resources: Coursera or edX courses, research papers

Community and Support :

- 41. Recommended forums or communities: Kaggle, Reddit (r/MachineLearning and r/DataScience), Data Science subreddit
- 42. Potential mentorship opportunities: Kaggle mentors, Data Science mentorship programs
- 43. Study group suggestions: Join online study groups or find study partners on social media platforms

Assessment and Evaluation :

- 44. Suggested methods for tracking progress: Logging exercises, tracking project progress, reflecting on learning journey
- 45. Key performance indicators: Completing exercises, completing projects, understanding concepts
- 46. Final project or exam details: Completing a capstone project applying data science skills

Additional Tips :

- 47. Time management strategies for a 7 months-month learning period: Break down learning into weekly tasks, prioritize tasks based on importance and deadlines
- 48. Recommended pace and intensity based on the 7 months-month duration: Consistent effort, 10-15 hours per week
- 49. Strategies for maintaining motivation over 7 months months: Celebrate small wins, find a study buddy, reflect on progress

Additional Resources

50. <https://github.com/sandhya1244/Python-Basics-For-Data-science>
51. <https://naina0405.substack.com/p/important-data-processing-techniques-9f0>
52. <https://www.statmethods.net/stats/index.html>
53. https://medium.com/@ayushi99/hypothesis-testing-df695e7b22b0?source=post_internal_links-----1-----
54. https://medium.com/@brisa527/download-in-pdf-582614d4fe96?source=post_internal_links-----3-----
55. https://medium.com/analytics-vidhya/different-model-evaluation-methodologies-part-2-679fcb064c55?source=post_internal_links-----2-----
56. <https://machinelearningflx.substack.com/p/best-resource-on-machine-learning-e52?r=i0uj4>
57. https://github.com/gianfa/deep_learning_resources
58. <https://medium.com/@yuxili/resources-for-deep-reinforcement-learning-a5fdf2dc730f>
59. <https://github.com/datasciencescoop/Data-Visualization>
60. <https://www.duarte.com/resources/books/datastory/>
61. <https://cornerhadoop.blogspot.com/>
62. <https://www.hadoop.net/>
63. <https://github.com/mkfrancis/Data-Science-Resources>

64. <https://github.com/DeepLearningPT/deep-learning-resources>

65.

<https://github.com/66daysofdata/Resources/tree/d6ef1738a7594b1c95314fb8843ee2af0fc87c47/Machine%20Learning>

Be brave enough to find the life you want and courageous enough to chase it. Then start over and love yourself the way you were always meant to!