tripleten

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Data Science Program

Syllabus

8 months

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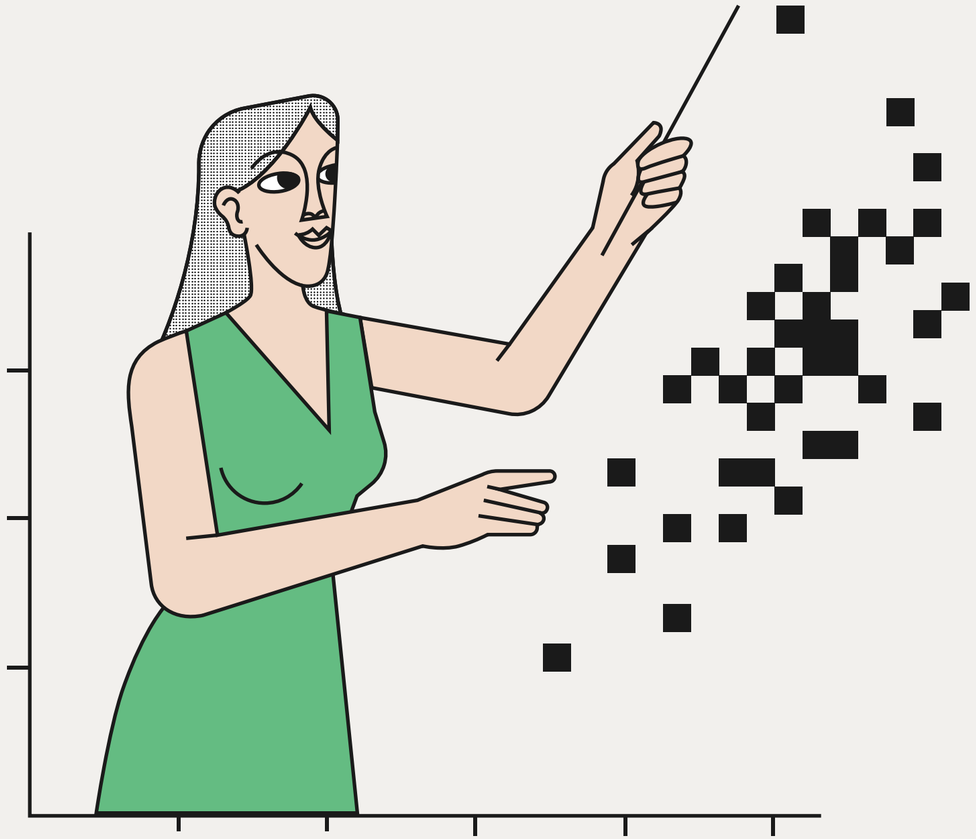
What is Data Science

8 months



The Data Science Program by TripleTen is an 8-month course designed for people with various backgrounds. You can come from any technical background and join our course to re-skill and become a high-paid professional.

The aim is to equip you with all the skills needed to land a job in the tech industry. You will learn everything from the fundamentals of data, like Python or Pandas, to more advanced topics and tools, like Machine Learning and Neural Networks. By the end of the program, you will have 17 projects in your portfolio to show future employers the exceptional specialist you have become.

And while getting to grips with a collection of professional tools and technical skills, you will train those soft skills required for success. You'll learn time management, goal setting, teamwork, and much more. You'll also learn soft skills specific to the tech industry—such as how to work with documentation—the ones needed to buildan online presence in your quest for a job.

Course Structure

Your journey will be divided into sprints, one-to-two week long work intensive periods grouped into thematic modules.

Each sprint will have a particular learning objective, reinforced through quizzes and tasks. Most tech companies work in this format, so you will come prepared. At the end of the sprint, you will take the skills you've learned and combine them with your existing skills to work on a project that will be assessed by industry experts.

We provide some rough time estimates to help you plan and manage your schedule, and we recommend spending around 20 hours per week studying. However, we understand that everyone has different commitments and people learn at different speeds. We also understand you may need a break at times, so we have some suggested breaks scheduled in too.

Module 1: Python and Software Engineering for Data Science

14 weeks

Python for Data Analysis and Statistics covers the foundation necessary to build a career in the data space. Python is a highly popular programming language, widely used in data applications, and statistics is the mathematical field underpinning Data Science. In this module we introduce both, and focus on Python as it is applied to statistics and data analysis.

Welcome Sprint: Basic Python

- Onboarding
- What Is Data Science?
- Python Fundamentals
- Strings
- Lists and Tuples
- Algorithms
- Guided Case Study: Basic Python

2 weeks | 40 hours

Sprint 1: Working with Data in Python

- Introduction
- Dictionaries
- Functions
- Using pandas to Work with Data
- Project: Basic Python

2 weeks | 40 hours

Sprint 2: Exploratory Data Analysis (EDA)

- Reading and Viewing Data
- Working with Missing and Duplicate Values
- Data Vizualisation
- Filtering Data
- Data Types
- Feature Engineering
- Data Transformations
- Soft Skills Lessons: Analytical & Critical Thinking
- Project

2 weeks | 40 hours

Sprint 3: Statistical Data Analysis

- Descriptive Statistics
- Probability Theory
- Testing Hypotheses
- Project
- Soft Skills Lessons: Communication Skills & Teamwork

2 weeks | 40 hours

Sprint 4: Software Development Tools

- Intro to Command Line
- Development Environment
- Git and GitHub
- Intermediate Python
- Project

2 weeks | 40 hours

Sprint 5: Integrated Project 1

A video game retailer has user and expert reviews, genre, console, and historical data on game sales available. Identify patterns that determine whether a game succeeds or not in order to spot potential big winners and plan advertising campaigns.

2 weeks | 40 hours

Sprint 6: Data Collection and Storage (SQL)

- Retrieving Data from Online Resources
- SQL as a Tool for Working with Data
- Advanced SQL Features for Analysts
- Relationships Between Tables
- PySpark
- Project
- Soft Skills Lessons: Self-Management

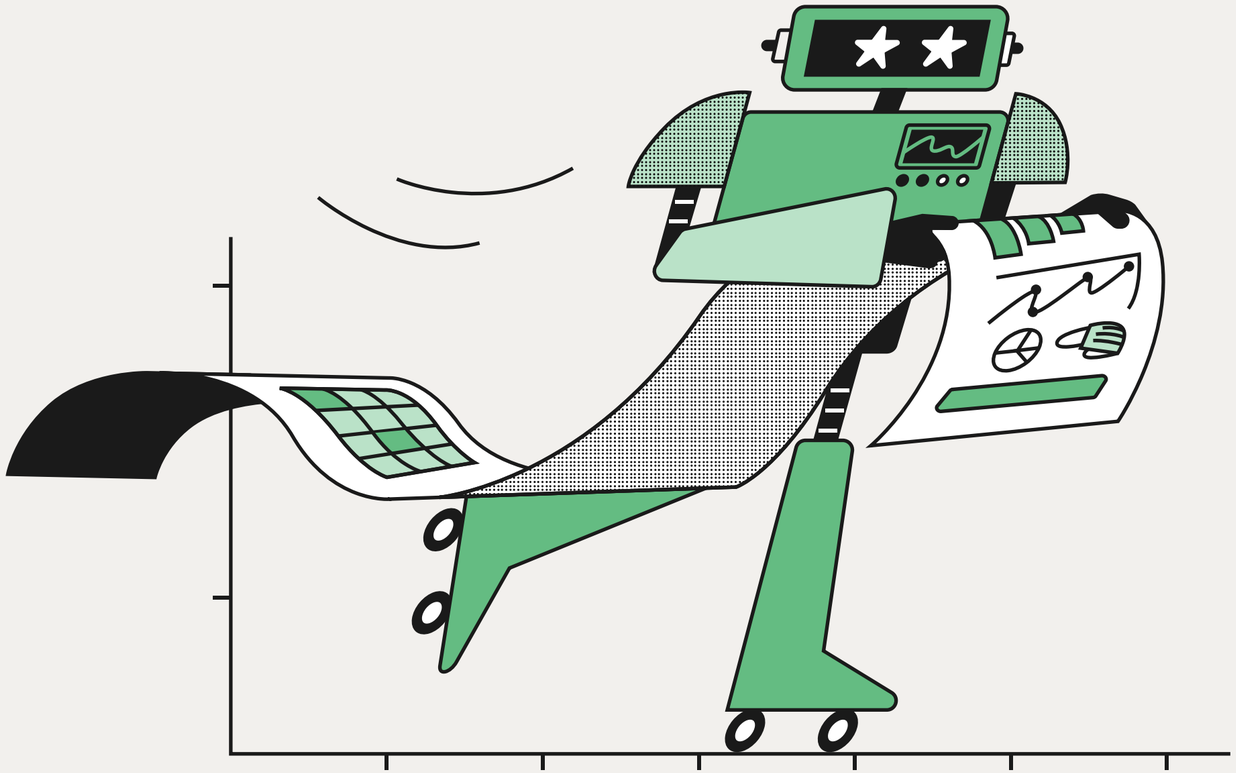
2 weeks | 40 hours

Module 2: Machine Learning

8 weeks

Data Science can do many things, but one of the most magical is Machine Learning—making computer models that can predict and enable inferences about the real world. Machine Learning builds on everything we have learned so far—statistics, Python, and software engineering—to enable creating intelligent systems.

This module introduces Machine Learning, covers supervised learning (including regression and classification models), and discusses how to explain Machine Learning and apply it in practical business situations.



Sprint 7: Introduction to Machine Learning

- Introduction to Machine Learning
- First Trained Model
- Model Quality
- Model Improvement
- Moving on to Regression
- Project

2 weeks | 40 hours

Sprint 8: Supervised Learning

- Feature Preparation
- Classification Metrics
- Imbalanced Classification
- Regression Metrics
- Project
- Soft Skills Lessons: Task Management

2 weeks | 40 hours

Sprint 9: Machine Learning in Business

- Business Metrics
- Implementing New Functionality
- Data Collection
- Project
- Soft Skills Lessons: Business Thinking & Problem Solving

2 weeks | 40 hours

Sprint 10: Integrated Project 2

Prepare a prototype of a machine learning model for Zyfra.
The company is developing efficiency solutions for the heavy industry. The model should predict the amount of gold extracted from gold ore. You have the data on extraction and purification.
The model will help optimize production and eliminate unprofitable parameters.

2 weeks | 40 hours

Module 3: Neural Networks and Advanced Techniques

11 weeks

One of the coolest things about Data Science is how it keeps advancing—new techniques are constantly developed, and the array of possibilities for the field is amazing. Nobody can learn all of it, but we're here to give you a curated selection of some of the best.

In this module we cover Time Series (handling data with a time dimension), Unsupervised Learning, Natural Language Processing, and Neural Networks applied to Computer Vision and more.

Sprint 11: Linear Algebra

- Vectors and Vector Operations
- Distance Between Vectors
- Matrices and Matrix Operations
- Linear Regression From the Inside
- Project

2 weeks | 40 hours

Sprint 12: Numerical Methods

- Algorithm Analysis
- Gradient Descent
- Gradient Descent Training
- Gradient Boosting
- Project

2 weeks | 40 hours

Sprint 13: Time Series

- Time Series Analysis
- Time Series Forecasting with Machine Learning
- Project

1 week | 20 hours

Sprint 14: Machine Learning for Texts

- Text Vectorization
- Language Representations
- Project

1 week | 20 hours

Sprint 15: Computer Vision

- Fully Connected Network
- Convolutional Neural Networks
- Project

2 week | 40 hours

Sprint 16: Unsupervised Learning

- Cluster Analysis
- Anomaly Detection

1 week | 20 hours

Sprint 17: Final Project

A telecom operator would like to be able to forecast their churn of clients. If it's discovered that a user is planning to leave, they will be offered promotional codes and special plan options. Interconnect's marketing team has collected some of their clientele's personal data, including information about their plans and contracts.

2 weeks | 40 hours

Career Preparation

From day one

Access career-focused lessons that strengthen both:

- **Hard skills:** for job applications
- **Soft skills:** networking, communication, self-promotion and interview techniques

Midway through

Partner with a career coach to:

- Develop a personalized job search strategy
- Perfect your resume, LinkedIn profile, and portfolio
- Practice interview & networking techniques in group and individual sessions

As you progress

- Participate in Code Jams—team competitions to apply your skills
- Complete an Externship—gain real-world business experience (you'll learn more as you advance!)

After graduation

Enter the job search phase with support from a Placement Coordinator:

- Regular check-ins to keep you on track
- Feedback to improve applications and networking
- Help connecting with recruiters and hiring managers
- AI-powered job search platform to manage applications and track progress

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