Department for Education

In partnership with HyperionDev

Data Science Bootcamp

BOOTCAMP OVERVIEW

Overview

Data science is a rapidly evolving field and has application in practically every industry. As ever-increasing volumes of data get generated, stored, and used for informing strategic decisions, there is tremendous value in being able to make sense of raw data and gather meaningful insights from it.

That is what makes data science ubiquitous. Once you understand how to think like a data scientist and work with data using popular tools and techniques, you will be able to apply your learning in sectors as diverse as marketing, health, finance, technology, sports, and public policy.

As a data scientist, you will often analyse large amounts of structured and unstructured data for purposes such as identifying patterns, predictive modelling, problem-solving and visual storytelling. In doing so, you will draw upon your knowledge of concepts and techniques from mathematics, statistics, and computer science. If you have a curious bent of mind, enjoy problem-solving, and aren't afraid of numbers, this may be the career for you!

No prior knowledge of coding is required when taking this bootcamp, as we help you progress from beginner to advanced, becoming job-ready. As part of the bootcamp, you're taught the fundamentals of programming and statistics and machine learning to enable you to start working as a data scientist.

Going Beyond the Essentials

You'll learn how to write code that can design and interact with databases to extract data that can solve real-world problems. The curriculum includes understanding and applying key machine learning and artificial intelligence concepts to practical uses.

Throughout the bootcamp, you will be guided to develop the skills required to think beyond mere coding or plain analytics. You'll also learn to communicate insights about your data to technical and non-technical stakeholders through visualisation. Your understanding of the popular applications of machine learning and AI will guide you throughout your own projects as you mature as a data scientist.

The Process

Step 1
Log onto your personalised dashboard

Step 2
Complete coding exercises online

Step 3
Your code reviewer reviews your work within 48 hours

Step 4
Perfect your coding over 16 weeks

Step 5
Graduate with a certificate of completion

Step 6
Begin your new career in tech with our support to help land your first interview

Outcomes of this Bootcamp

- Write useful code in Python, one of the most popular languages for programming and data science.
- Collect and clean large amounts and varieties of data and transform them into more usable formats.
- Develop an understanding of key statistical methods in order to read, analyse, and summarise data.
- Present and communicate insights about your data through visual storytelling and reports.
- Look for relationships and patterns in data and spot trends in complex datasets.
- Solve industry-specific problems using data-driven techniques and domain knowledge.
- Become job-ready with our career support team that guides and prepares you for the tech career you're aiming for.

Code reviewers Powered by HyperionDev

Bootcamp code reviewers are expertly trained to integrate code review into the lives and bootcamp curriculum of students. The on-demand code review method helps students to become fluent in the language of their choice.

Our 1-on-1 code-review-centric approach works

Code review enables you to learn to code and work with data science tools the right way, which is a prerequisite for a career in data science. We help you master the deeper aspects of industry-level coding skills to set the foundation for a lucrative career in data science.

Here's why learning through code review is smarter

DON'T MAKE THE SAME MISTAKES AS COMPUTERS

- Automated code checking is like spell check for computer programs. You can't write a world-class essay with just good spelling — you need the right tone, facts, grammar, and style. Only human-led code review can help you learn aspects of coding that are analogous to tone and style that will make you truly fluent as a developer — automated graders just can't help you learn this!

GET UNSTUCK WITH ON-DEMAND TECHNICAL HELP

- Our code reviewers will ensure you move at a steady pace by helping you debug your programs within 48 hours. This will help you to keep moving forward so that you never drop out.

BE EXPOSED TO THE INDUSTRY STANDARDS FROM DAY ONE

- Developers in the real world have their work assessed by a senior developer through the technique of code review. We're the only bootcamp in the world that exposes our students to this technique from day one so that you get an advantage in the job market.

We layer a proven, personalised approach to our code review

INDUSTRY EXPERTS TAILORED TO YOUR GOALS

- You'll work with experienced code reviewers who will guide you through 1-on-1 calls, career coaching, live chat, and email support.

JOIN A COMMUNITY OF CAREER CHANGERS

- Learn as part of a cohort of students all working towards ultimate career fulfilment. Join online group tutorials, community chats and meetups, and peer coaching.

FREE OF FEAR OF FAILURE

- Human-led code review builds trust with your educators and lets you progress at your own pace. Establish a safe space to discuss any roadblocks without fear of failure.

Why Choose Data Science as a Career?

Data is only as valuable as the person who is able to read it. Data science is the art of collecting, exploring, and processing raw data so that it produces actionable insights for a business. Data scientists provide incredible value in being able to conduct in-depth analyses in order to communicate beneficial solutions to various stakeholders. Because of their inevitable significance to the tech industry, data scientists are in high demand, and in turn, earn high salaries. According to Glassdoor's 2018 list of best jobs in America, Data Scientist takes the #1 spot, with a median base salary of $110,000, and coming out on top with high job satisfaction ratings.

If you're looking for a career that is both rewarding and lucrative, data science delivers on both. Those who develop data science skills can choose to pursue a variety of career paths, ranging from business analyst to machine learning engineer.

How we get you hired

We're with you every step of your journey, and our support doesn't end when you graduate. Our career services are developed to help you stand out from the crowd, and grab the attention of top employers.

TECHNICAL CV AND PORTFOLIO

Receive technical assistance in getting your CV industry-ready according to accepted best-practice format.

BOOTCAMP CERTIFICATE

Walk away with a newly minted certificate as evidence of your skills and expertise in data science.

INTERVIEW PREPARATION

Know what to expect when getting ready for that big interview with expert interview preparation from professionals who have been where you are.

GUARANTEED INTERVIEW

We work with select hiring partners and will aim to help you land your first tech job interview after the completion of your bootcamp.

Career paths

DATA ARCHITECT

Ensure data solutions are built for performance and design analytics applications for multiple platforms. In addition to creating new database systems, data architects often find ways to improve the performance and functionality of existing systems, as well as working to provide access to database administrators and analysts. **Responsibilities include:**

- Developing and implementing an overall organisational data strategy that is in line with business processes
- Identifying data sources, both internal and external, and working out a plan for data management that is aligned with organisational data strategy
- Coordinating and collaborating with cross-functional teams, stakeholders, and vendors for the smooth functioning of the enterprise data system
- Defining and managing the flow of data and dissemination of information within the organisation
- Integrating technical functionality, ensuring data accessibility, accuracy, and security

A Data Architect in the United Kingdom can earn an average salary of £66,646 per year.

MACHINE LEARNING ENGINEER

Machine Learning Engineers create data funnels and deliver software solutions. They typically need strong statistics and programming skills, as well as a knowledge of software engineering. In addition to designing and building machine learning systems, they are also responsible for running tests and experiments to monitor the performance and functionality of such systems. **Responsibilities include:**

- Designing and developing machine learning and deep learning systems
- Running machine learning tests and experiments
- Implementing appropriate ML algorithms

A Machine Learning Engineer in the United Kingdom can earn an average salary of £51,487 per year.

APPLICATIONS ARCHITECT

An Applications Architect tracks the behaviour of applications used within a business and how they interact with each other and with users. They focus on designing the architecture of applications as well, including building components like the user interface and infrastructure. **Responsibilities include:**

- Designing major aspects of the architecture of an application, including components such as the user interface, middleware, and infrastructure
- Providing technical leadership to the application development team
- Performing design and code reviews
- Ensuring that uniform enterprise-wide application design standards are maintained
- Collaborating with other stakeholders to ensure the architecture is aligned with business requirements

An Applications Architect in the United Kingdom can earn an average salary of £61,621 per year.

BUSINESS INTELLIGENCE (BI) DEVELOPER

BI Developers design and develop strategies to assist business users in quickly finding the information they need to make better business decisions. Extremely data-savvy, they use BI tools or develop custom BI analytic applications to facilitate the end-users' understanding of their systems. **Responsibilities include:**

- Designing, developing, and maintaining business intelligence solutions
- Crafting and executing queries upon request for data
- Maintaining and supporting data analytics platform
- Creating tools to store data
- Conducting unit testing and troubleshooting
- Evaluating and improving existing BI systems

A Business Intelligence (BI) Developer in the United Kingdom can earn an average salary of £44,571 per year.

DATA ENGINEER

Perform batch processing or real-time processing on gathered and stored data. Data Engineers are also responsible for building and maintaining data pipelines which create a robust and interconnected data ecosystem within an organisation, making information accessible for data scientists. **Responsibilities include:**

- Analysing and organising raw data
- Building data systems and pipelines
- Interpreting trends and patterns
- Building algorithms and prototypes
- Developing analytical tools and programs

A Data Engineer in the United Kingdom can earn an average salary of £48,481 per year.

BUSINESS ANALYST

A Business Analyst examines and analyses business processes. This professional finds efficiencies and takes on a leadership position when it comes to project teams. The business analyst provides necessary technical information for the business. **Responsibilities include:**

- Creating solutions and communicating them to the business
- Evaluating business processes
- Report management
- Data analysis, including pricing, budget forecasts, and plans
- Effective presentation of data to the business

A Business Analyst in the United Kingdom can earn an average salary of £42,768 per year.

Structure of the bootcamp

This bootcamp helps you progress from learning the basics of programming and data science to becoming a data scientist with a rewarding and satisfying job. Proceed from novice to coding expert, and land the successful career you deserve:

BOOTCAMP PREP

- Learn about programming and data science in general, and how HyperionDev supports you in achieving your career goals. Start programming with Python with an introduction to basic machine learning concepts to decide if a data science career is really for you.

PYTHON FOR DATA SCIENCE

- Get to grips with the fundamentals of Python, fast emerging as the most popular programming language for data science.

DATA ANALYTICS AND EXPLORATION

- Learn how to work with databases and popular Python packages to handle a broad set of data analysis problems. You also learn how to create visualisations that can communicate insights about your data.

MACHINE LEARNING AND AI

- Begin with fundamental statistical and machine learning concepts. As you progress through the tasks, build a solid understanding of supervised learning, unsupervised learning and machine learning applications in various industries.

Breakdown of syllabus

The bootcamp is structured to allow you to start coding as soon as possible.
Tasks are designed to:

- Teach you the theory needed to develop your skills
- Give you the platform to practise implementing your new knowledge by completing practical exercises

Remember, with HyperionDev, you're never alone. Contact a code reviewer for support whenever you need help with a task. The code that you submit for each task is reviewed by an expert, ready to help improve the efficiency and quality of your code.

Data Science Syllabus

Tasks: 53 **Capstone projects: 7** **Build your Brand Tasks: 5**

1	**Thinking Like a Programmer - Pseudo code**	Learn how pseudo code can help you clarify your thoughts and properly plan your programs before writing any code.
2	**Your First Computer Program, and Using Variables**	Get acquainted with Python, the powerful, easy to learn and extremely popular, high-level programming language. Learn how to store and interact with the data in our programs using variables.
3	**The String Data Type**	Learn how to store and manipulate text using the String data type.
4	**Numerical Data Types**	Explore the different types of numbers used in the Python programming language.
5	**Beginner Control Structures: The Boolean Data type and if, else, and elif Statements**	Learn how to use the control structures and the boolean data type to make decisions in your program.
6	**Logical Programming - Operators**	Learn how to tell the compiler how to perform specific mathematical, relational or logical operations using operators.
7	**Capstone Project I - Variables and Control Structures**	Put your knowledge of variables and control structures to the test by creating an investment calculator.
8	**Build your Brand I**	Identify your top companies to work for and take your first steps towards securing an interview.

9	**Beginner Control Structures - While Loop**	Learn how to execute a block of code repeatedly until a given condition returns false using while loops.
10	**Beginner Control Structures - For Loop**	Learn how to use the for loop to repeat a section of code a specified number of times.
11	**Towards Defensive Programming I - Error Handling**	Discover the different types of errors that might occur in your programs and how to handle them.
12	**String Handling**	Learn how to manipulate text using Python's built-in functions.
13	**Beginner Data Structures - The List**	Discover the most frequently used and versatile collection datatype used in Python - the list.
14	**Working with External Data Sources - Input**	Create smarter programs by learning how to read data from text files.
15	**Working with External Data Sources - Output**	Learn how to write data to text files.
16	**Build your Brand II**	Create a professional cover letter and CV.
17	**Beginner Data Structures - Lists and Dictionaries**	Learn how to manipulate lists and become acquainted with dictionaries.

18	**Beginner Programming with Functions - Using Built-in Functions**	Learn how to use Python's built-in functions to provide better modularity for your programs and encourage code reuse.
19	**Beginner Programming with Functions - Defining Your Own Functions**	Create your own Python functions to carry out specific tasks.
20	**Hypothesis-driven Debugging with the Stack Trace**	Learn to debug methodically and move away from trying to resolve errors randomly.
21	**Capstone Project II - Lists, Functions, and String Handling**	Use all the knowledge you have gained throughout this course to create a useful program.
22	**Build your Brand III**	Create or update your LinkedIn profile to connect with a network of professionals and let people know about your skills.
23	**Beginner Data Structures - 2D Lists**	Learn how to use list elements that use more than one index.
24	**Towards Defensive Programming II**	Learn how to use list elements that use more than one index.
25	**Introduction to OOP I - Classes**	Introduction to the principles of Object Oriented Programming.
26	**Data Visualisation I**	Understand basic data visualisation and how to choose the best form of visualisation based on aspects such as nature of dataset and expectations from the visualisation exercise.

27	**Data Visualisation II**	Dive into more complicated data visualisation; Scatterplot matrix; Network visualisation.
28	**Data Visualisation III**	Explore popular data visualisation tools such as Tableau.
29	**Working with Datasets**	Learn how to import and export data in Python. Start importing and manipulating datasets.
30	**Data Visualisation IV**	Set up Matplotlib and understand how to start loading data from a CSV and NumPy + Pandas. Create basic visualisations using Matplotlib, such as pie charts and bar graphs.
31	**Data Analysis I**	Learn about cleaning data, dataframe manipulation, and summarising data.
32	**Data Analysis II**	Understand how to deal with Missing Values and turn categorical variables into quantitative variables. Explore data normalisation.
33	**Exploratory Data Analysis**	Learn about descriptive statistics and concepts such as GroupBy, Correlation, and Analysis of Variance (ANOVA).
34	**Capstone Project III: Data Analysis**	Build an analysis report based on a dataset.
35	**Data Visualisation V**	Create advanced visualisation using Matplotlib, including scatterplots, time-series plotting, area charts, and 3D plots.
36	**Capstone Project IV: Data Visualisation**	Put your knowledge of data analytics and visualisation to the test in this comprehensive task.

37	**Introduction to Databases**	Compare relational, graph, and NoSQL databases. Design and build a relational database.
38	**Working with SQL and SQLite**	Learn how to communicate with your database using SQLite, a self-contained, public domain SQL database engine.
39	**Capstone Project V: Databases**	Design a system that interacts with a database.
40	**Introduction to Machine Learning**	Explore what a data scientist does. Be introduced to supervised and unsupervised machine learning.
41	**Supervised Learning I: Simple Linear Regression**	Learn what linear regression is and when to apply it.
42	**Supervised Learning II: Multiple Linear Regression**	Explore more concepts such as multiple linear regression, and Training vs. Test sets.
43	**Supervised Learning III: Logistic Regression**	Be introduced to the notion of classification, and learn the application of logistic regression to binary classification.
44	**Supervised Learning IV: Decision Trees I**	Learn about regression trees and classification trees, essential concepts in supervised learning.
45	**Supervised Learning V: Decision Trees II**	Dive deeper into supervised learning by learning about bagging, random forests, and boosting.
46	**Capstone Project VI: Image Processing**	Build an image recognition classifier which accurately determines the house number displayed in images from Google Street View.

47	**Build your Brand IV**	Identify and prioritise current job opportunities and submit applications to your top 5 advertised roles.
48	**Unsupervised Learning I: Clustering I**	Understand how to work on clustering algorithms such as k-means, a commonly used unsupervised learning algorithm.
49	**Unsupervised Learning II: Clustering II**	Explore more unsupervised learning algorithms such as hierarchical clustering.
50	**Unsupervised Learning III: PCA**	Add to your knowledge of unsupervised learning by studying dimensionality reduction.
51	**Capstone Project VII: Unsupervised Machine Learning**	Test your knowledge of unsupervised machine learning in this challenging task.
52	**Git basics**	Dive into using Git and discover how to set up a repository, use common Git commands, commit a modified file, view your project's history, and branch.
53	**Build your Brand V**	Use GitHub to start building a portfolio of work that you can share with others to showcase your skills.