



Data Science and Artificial Intelligence

Bootcamp Brochure

Table of Contents

Overview	1
Key tools and languages	2
Prerequisites	2
What to expect	3
Our unique approach	4
Personalised mentorship	5
How we help you get hired	6
Syllabus outline	8
Potential career paths	11
Participant success stories	12
Technical requirements	13
Take the next step toward your tech career	13



Overview

Are you ready to step confidently into the evolving world of data? Our comprehensive Data Science and Artificial Intelligence Bootcamp is designed to fast-track your career and unlock new opportunities in one of today's most in-demand fields. This hands-on program gives you the practical skills and confidence to work with the tools that power data-driven decisions, from predictive analytics to machine learning.

The curriculum is thoughtfully designed to balance essential theory with real-world application. You will learn how to uncover insights from complex datasets and apply them to real business challenges. Whether you are switching careers or looking to upskill, you will build a portfolio of projects that showcases your ability to solve problems using data and stand out in the job market.



Duration

3-6 Months,

Part-Time: 5-10 hours

Full-Time: 35-40 hours



Experience

None-Required



Format

Online, Self-Paced

Throughout this bootcamp, you will:



Develop a strong technical foundation

Learn Python, SQL, and essential data science best practices to navigate data analysis and database management confidently.



Build scalable, professional data solutions

Use industry-standard tools like Git, GitHub, and key Python libraries (NumPy, Matplotlib, Seaborn) to collaborate and create scalable data solutions.



Explore machine learning and AI

Train, evaluate, and improve models using tools like PyTorch, explore advanced AI methods like LSTMs and GRUs for sequential data, and apply machine learning techniques like random forests, neural networks and sentiment analysis.



Translate data into insights

Develop compelling data visualisations with Tableau and transform complex data into clear, interactive insights.

¹Long Short-Term Memory (LSTM)

²Gated Recurrent Unit (GRU) networks

Key tools and languages



By the end of this bootcamp, you'll be fluent in the technologies that drive the data science industry, ready to deliver insights and build solutions with confidence.

Prerequisites

This is a beginner-friendly program with no formal prerequisites. Whether you're new to tech, looking to formalise and grow your existing skills, or a recent graduate ready to launch your career, this bootcamp is designed for you.

You'll be guided through the tools, libraries, and methodologies that are most valued by employers, ensuring you're well-prepared to meet industry demands.

Not sure if this bootcamp is right for you? Our Admissions team is here to discuss your background and learning goals and help determine whether the Data Science and Artificial Intelligence Bootcamp is the right fit.



What to expect

Our bootcamp experience is **built on three core pillars**:

- Personalised academic support
- A flexible, supported learning journey you can shape around your life
- Career services designed to get you hired

Whether you choose to study part-time or full-time, you'll benefit from a blend of expert instruction, real-world projects, and personal mentorship to help you build job-ready skills on your schedule.

A dedicated support team

You'll be backed by a dedicated team whose goal is to help you succeed—from your first module to your job search.



Academic mentors and facilitators

Industry experts review your work, provide detailed 1-on-1 feedback, and guide your understanding of key concepts. They'll help ensure you're not just learning—but applying your skills effectively.



Career services coaches

Specialists who support your career development with job search strategies, interview prep, portfolio building, and long-term planning. They're here to help you move confidently into the job market.

Learning that fits your lifestyle

Life doesn't pause while you learn. That's why our bootcamp is designed with flexibility at its core. You'll have the freedom to work through self-paced lessons and exercises around your existing commitments. Our team is available 24 hours a day to provide you with support.

A well-rounded course experience

As a bootcamp participant, you'll engage in project-based learning designed to spark curiosity, build technical fluency, and provide practical experience.

Throughout the bootcamp, you will:

- Explore new tools and concepts through self-paced online lessons.
- Reinforce your knowledge by completing hands-on tasks and exercises.
- Receive 1-on-1 human-led task reviews to check for understanding and real-world application.
- Participate in live facilitator-led lectures and interactive discussions to dive deeper into Data Science topics, industry trends, and best practices.
- Build real-world projects that not only reinforce your learning but also serve as portfolio-ready proof of your capabilities.

Our unique Approach

Human-led feedback is the best way to learn—and we've built our entire model around it.



Code reviewed by humans, not algorithms

Forget robotic feedback. Our expert code reviewers give real, contextual input—spotting logical flaws, teaching best practices, and helping you think like a developer.



Progress without the panic

Learning to code is hard. That's why our on-demand mentors help you troubleshoot fast so you can keep your learning smooth and steady.



Build skills employers actually want

Anyone can write code that runs. We teach you to write code that's scalable, maintainable, and ready for the workplace. We simulate real-world dev environments with code reviews that mirror what senior engineers do—so you're job-ready faster.

Personalised Mentorship



Guidance from academic coding mentors

Work one-on-one with experienced academic coding mentors who align with your learning goals. Receive tailored feedback through scheduled calls and ongoing email support to keep your progress on track.

A community that grows with you

Join a vibrant cohort of fellow career changers. Take part in live online lectures, tutorials, community chats, and virtual meetups—designed to keep you motivated and supported every step of the way.

A safe space to learn and grow

Our human-led mentorship creates a trusting, supportive environment. Progress at your own pace, discuss challenges openly, and overcome obstacles without fear of failure.

How we help you Get Hired

Learning job-ready skills is just the beginning. Our dedicated Career Services team aims to support you in making a confident transition from bootcamp graduate to professional, whether you're entering a new industry, upskilling in your current role, or pivoting to a new career path.

88%
Employment rate*



*According to the [HyperionDev 2024 Graduate Outcomes Report](#).

Throughout your learning journey, you'll gain practical tools and guidance to help you:

- Understand the job market and create a targeted job search strategy
- Develop a personalised and actionable career plan
- Build a strong professional brand, both online and offline
- Prepare for interviews with confidence and clarity
- Stay motivated with structured, ongoing support
- Navigate your first 90 days with expert guidance
- Gain access to our private alumni network with exclusive benefits



Employer connections and industry exposure

We work with select hiring partners to offer networking opportunities through spotlight events, hackathons, and community initiatives. When there's a strong fit, we also share standout participant profiles with partners—giving you the chance to get noticed for roles that align with your skills and goals.



Interview preparation

We simulate real-life interview scenarios through mock interviews to help you build confidence and refine your technique. Whether you're sharpening your general interview skills or preparing for a specific role, our coaches tailor sessions to align with the job description and expectations of the company you're interviewing with.



Goal-based guidance

A tailored career action plan is developed based on your unique background, career aspirations, and current readiness. This plan is broken down into manageable weekly goals and tasks that you'll work through with your career coach, helping you stay focused and make measurable progress toward your job search objectives.



Job search material reviews

Career coaches provide personalised feedback on your resume, LinkedIn profile, cover letter, and technical portfolio on GitHub (where relevant), ensuring each aligns with current industry standards and effectively showcases your skills to employers.



Syllabus outline

What you'll learn:

LEVEL 1 - Python for Data Science

MODULE

01

Introduction to Programming

- Get started with the fundamentals of programming.
- Learn to plan your code using pseudocode before diving into Python.
- Explore how to use variables to store and manipulate data, work with essential data types like strings and numbers, and apply control structures to guide the flow of your programs.
- Develop your understanding of logical and mathematical operators to perform calculations and comparisons—key skills for writing clear, functional code.

Capstone Project – Variables and Control Structures

Apply what you've learned by building an investment calculator, combining variables, control structures, and user input in a real-world mini project.

MODULE

02

Python in Practice

- Deepen your Python programming skills by working with different data structures.
- Gain practical experience with file input/output operations, string manipulation, and both built-in and user-defined functions to write more modular and reusable code.
- Explore error-handling techniques to write more resilient programs and learn how to methodically debug your code using stack traces—an essential skill for real-world development.

MODULE

03

Advanced Python, Shell Scripting, and Version Control

- Explore advanced programming techniques to take your Python skills to the next level.
- Dive into object-oriented programming (OOP), including classes and inheritance, to build modular and reusable code. You'll also cover more complex data structures like 2D lists, as well as concepts such as recursion, sorting, and searching algorithms.
- Gain exposure to real-world development practices, including writing shell scripts to automate tasks and using Git for version control.

Capstone Project – Task Manager

Synthesise and apply all the knowledge you have gained to incrementally build a useful task manager application.

LEVEL 2 - Data Analytics and Exploration

MODULE 04

Data Management

- Learn the fundamentals of working with databases.
- Explore different types of databases and how they are managed, with a focus on relational databases and data normalisation techniques to optimise structure and minimise redundancy.
- Gain hands-on experience writing SQL queries to manipulate and manage data, and you'll use SQLite to create and interact with databases through Python.

Capstone Project – Databases

Design a system that interacts with a database.

LEVEL 3 - Machine Learning

MODULE 05

Data Analytics and Exploration

- Build a strong foundation in data analysis by learning essential statistical concepts and working with popular Python libraries such as NumPy, Pandas, Matplotlib, and Seaborn.
- Gain hands-on experience importing, cleaning, and manipulating datasets, and conducting exploratory data analysis (EDA) to uncover meaningful insights.
- Learn to communicate your findings effectively through data visualisation, using both Python libraries and industry-standard tools like Tableau.

Capstone Project – Data Analysis

Build an exploratory data analysis report based on a dataset.

MODULE 06

Introduction to Machine Learning

- Dive into machine learning, focusing on both theoretical foundations and practical applications.
- Understand key machine learning concepts, including how models learn from data and how their performance is evaluated. The module includes a hands-on introduction to supervised learning with linear regression, as well as foundational concepts in calculus and linear algebra that underpin many machine learning algorithms.

Capstone Project – Linear Regression in Action

Identify a linear regression problem, fit an appropriate model, and explain the results.

MODULE 07

Supervised Machine Learning

- Deepen your understanding of supervised learning techniques, focusing on more advanced algorithms used in both classification and regression tasks.
- Explore logistic regression, decision trees, and ensemble methods like random forests and boosting.
- Apply machine learning to image data by building a simple image classifier.

Capstone Project – Machine Learning

Utilise your knowledge of machine learning to build models and interpret outputs.

MODULE
08**Unsupervised Machine Learning**

- Understand supervised learning techniques that uncover hidden patterns and structures within data without the need for labelled outcomes.
- Work with clustering methods such as K-means and hierarchical clustering to segment data and recognise patterns and use Principal Component Analysis (PCA) to reduce the dimensionality of complex datasets.

Capstone Project – Unsupervised Machine Learning

Use PCA and clustering techniques to identify distinct groups within a high-dimensional dataset, revealing underlying patterns and relationships.

MODULE
09**Neural Networks**

- Learn the foundational concepts and techniques behind modern neural networks. You'll begin with the essential mathematics of multivariable calculus, then move into the mechanics of how feedforward neural networks learn from data.
- Explore key training techniques like backpropagation, gradient descent, and regularisation, and apply your knowledge by building a neural network using PyTorch. As you progress, you'll dive into Recurrent Neural Networks (RNNs), including advanced architectures like LSTM and GRU, designed for sequential data such as language and time series.

Capstone Project – Neural Networks

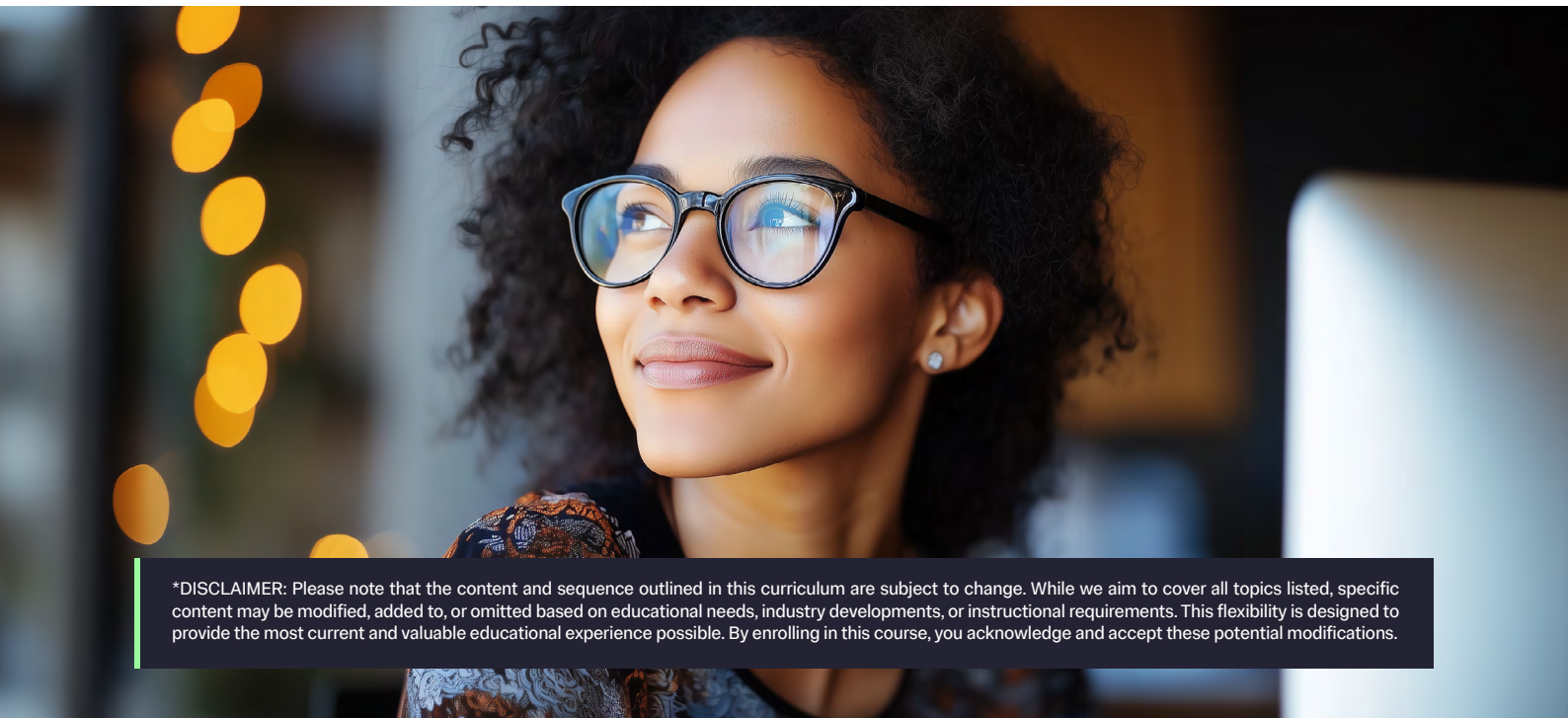
Use what you have learned about sequential models to build and assess a program that generates business slogans for specific industries and predicts the industry from a given slogan.

MODULE
10**Natural Language Processing (NLP)**

- Explore the fundamentals of Natural Language Processing, a crucial area of data science that enables machines to interpret and generate human language.
- Learn essential techniques for processing and analysing text data, including methods for understanding semantic similarity between words and sentences.

Capstone Project – NLP Applications

Create a script to perform sentiment analysis.



*DISCLAIMER: Please note that the content and sequence outlined in this curriculum are subject to change. While we aim to cover all topics listed, specific content may be modified, added to, or omitted based on educational needs, industry developments, or instructional requirements. This flexibility is designed to provide the most current and valuable educational experience possible. By enrolling in this course, you acknowledge and accept these potential modifications.

Potential Career paths

After completing your bootcamp, you can apply for data-related roles as an employee or as a freelancer in various positions such as:



Data Architect

Data Architects design and optimise high-performing data systems across platforms, ensuring efficient data access, scalability, and support for analytics.



Applications Architect

Applications Architects design and oversee the structure of software applications, ensuring seamless user experience and system integration across platforms.



Business Intelligence (BI) Developer

BI Developers create tools and strategies that help businesses extract actionable insights from data, enabling smarter, faster decision-making.



Data Engineer

Data Engineers build and manage the data pipelines that power analytics and machine learning, ensuring reliable, scalable access to clean, structured data.



Machine Learning Engineer

Machine Learning Engineers design and build intelligent systems that learn from data, using programming, statistics, and software engineering to develop and optimise models for real-world applications.



Business Analyst

Business Analysts analyse business needs and processes, using data-driven insights to improve efficiency and support strategic decision-making.

86%

Tech Industry Transition*

86% of our participants move into new roles in the tech industry, while 14% apply their new tech skills in other industries.

*According to the [HyperionDev 2024 Graduate Outcomes Report](#).

Participant Success Stories

Join an international community of +13,000 alumni.



Simon Whelan

From Chef to Engineer

After completing the online boot camp, Simon transitioned from working as a chef to becoming a self-employed Software Engineer. The program helped him discover his true passion, provided the support he needed to pursue a better career, and gave him the confidence to step into the tech world and do something he loves.



Alex Chelu

Gained Valuable Tech Skills

Alex joined the Data Science Bootcamp, drawn by its strong reputation and affordability. He gained valuable skills through a structured, hands-on curriculum. A standout project, a financial calculator, boosted his coding confidence and practical understanding. Alex highly recommends the bootcamp to anyone looking to grow in data science.



Mohammed El-Jarad

From Underground Encounter to AI Consultant

Mohammed's tech journey began with a chance encounter on the London Underground and quickly became a life-changing opportunity. The bootcamp's flexible curriculum suited his unconventional path, combining guided learning with independent progress. With mentorship and a focus on overcoming challenges, Mo built a strong foundation and is now a management consultant in AI and data. He credits the bootcamp for boosting his coding confidence and opening doors to cloud, AI, and machine learning careers.

Technical requirements

- Participants will need **access to the Internet and a computer**.
- We recommend that you **use the Google Chrome browser** when accessing the online learning platform. Although this is not a requirement, we've found that this browser performs best for ease of access to course materials.
- The Data Science and Artificial Intelligence Bootcamp also requires **downloading additional software and resources**. During your program, these additional software and resource requirements will be communicated to you.
- You will **use the free trial versions** during your time on the course and will not need to purchase additional software licenses.

Take the next step toward your tech career

Whether you're just exploring or ready to dive in, we've got an option for you:



Book a call

Chat with our Admissions team about your goals, course fit, and financing options.



Join an online info session

Get a firsthand look at how our bootcamps work.



Apply now

Ready to start? Head straight to the course page and kick off your application.

Imperial College London is collaborating with online education provider HyperionDev to offer a portfolio of high impact outcomes-oriented online bootcamps. The partnership aims to broaden access to tech education through an engaging human-led online model.