



Data Science Career Track

Syllabus & Course Overview

Introduction

Data Science is one of the fastest growing fields of this decade. There is an explosion of data fueled by cheap and ubiquitous storage of everything from personal and health records, every single action on millions of websites, mobiles, sensors, business transactions and so on. We now need technologies that help us make sense of this data, and become more intelligent in our decisions. That is the mandate of the field of Data Science. Learning Data Science is perhaps the best career investment you can make right now. According to LinkedIn, Statistical Analysis & Data Mining were the hottest skills that got recruiters' attention last year.

Springboard's Data Science Career Track is our most intensive course to date, with a 500+ hour curriculum designed around 14 big and small data projects. You'll learn advanced data science topics, whether you choose our general career track or specializations. You'll also have mock interviews, dedicated community managers, course TAs, and 1-on-1 sessions with career coaches to help you succeed.

In fact, we're so confident that this program will launch you into a Data Science career that we'll refund your tuition if you don't find a job within 6 months of graduating!

Prerequisites

You should have a strong background in probability & statistics and should be very comfortable programming in any language. We recommend at least 6 months' experience in 1 language with 5000 or more lines of code. If you don't meet these requirements, check out our Data Science Career Track Prep course instead.

How our job guarantee works

We work with you to supplement your learning efforts to ensure a successful job search after completion. If you meet our criteria, we guarantee that you will be offered a job in a data science or analytics field within 6 months of graduating from the course, or your tuition back. More details of the job guarantee are available [here](#).

Admission Process



1. Submit your application

Fill out our application form to get started. There is no application fee. It takes about 10-15 minutes. You should expect a reply in 2-3 business days.



2. Pass the challenge

If it's a fit, we'll send you a challenge to test your statistics and programming knowledge. Applicants spend up to 3 hours on the challenge.



3. Reserve your spot

If you pass the challenge, we will send you a registration link. Choose the start date and payment plan that works for you (we can help!).



4. Join the program

You'll be one of fewer than 20% of applicants who secured a spot in the Data Science Career Track. Congratulations!

How it works

1. Cost and schedule: The course costs **\$7,500 and runs for 6 months**. We also have a per-month payment plan and financing options. It is fully online, and allows you to study anywhere and anytime you want. You'll have 30min video calls with your mentor every week, and continued access to your Springboard account and online community after you graduate.

2. Enrollment: Once your application is accepted, we'll send you a custom link to make the payment and enroll. We have cohorts starting every month, and you can enroll for a future cohort.

3. Mentor-matching process: Once you enroll, you'll be asked to fill out a profile in which you'll write a short bio about yourself, your availability during the week, and the skills you want to develop. Your Student Advisor will use this information to match you with a mentor who suits your specific needs.

4. Curriculums curated by experts: Diverse perspectives lead to better learning outcomes. Our **500+ hour** expert-curated curriculum is curated by data science experts from **Dell, Cisco, and Pindrop Security** - from the best sources on the web (tutorials, videos, podcasts, papers, articles, and some optional books), and updated to reflect new industry trends and hiring needs.

5. Practice concepts through projects: A lot of your time will be spent working on hands-on projects and applying what you're learning. Working with your mentor, you will get experience with real business problems and datasets.

6. Career Services: You will get career resources as part of the curriculum, as well as 1-on-1 video calls with a career coach, where you will cover resume review, mock interviews, and salary negotiation tips and more.

7. Graduating from the course: You will exhibit your data science skills through your **Capstone Projects** which will be approved by your mentor. Once you complete all other assignments, you will receive a certificate that describes your learning. You can even add this to your LinkedIn profile!

Why is mentorship important?

Mentors hold students accountable, help them grow, and impart real-world knowledge and advice. **Research shows that having a mentor makes you 5 times more likely to get promoted and more likely to get a raise.**

Our mentors are experienced professional Data Scientists who are motivated by a desire to give back to their communities. We select them based on a combination of professional experience, educational background, skills-based competencies, and a portfolio of work. More importantly, we look for empathetic individuals with top-notch communication abilities, and an intrinsic love of teaching.

Some of our mentors



Ryan Rosario
Machine Learning Engineer



Eric Rynerson
Data Scientist



Sameera Poduri
Principal Data Scientist



Ike Okonkwo
Sr. Data Scientist



Units – What you'll learn

Each module will cover a key aspect of Data Science and have a combination of materials: lectures, theory, coding exercises, reading/viewing exercises, and career-related coursework. The recommended time allocation is based on a total of 500 hours of work, and can be scaled according to student needs.

1. The Python Data Science Stack (21+ hours)

Python has become a lingua franca of data science. In this module, you'll learn to program in Python, how to follow best coding practices, and start using an ecosystem of useful and powerful Python-based tools.

Topics covered:

1. Python
 2. Matplotlib, Seaborn—visualization tools in Python
 3. Writing clear, elegant, readable code in Python using the PEP8 standard
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2. Data Wrangling (54+ hours)

Data scientists spend a lot of time on data wrangling (i.e. acquiring raw data, cleaning it, and getting it into a format amenable for analysis), usually with the help of semiautomated tools. In this module, you'll learn the most common tools and workflows in Python that make this normally onerous task a snap.

Topics covered:

1. Deep dive into Pandas for data wrangling
 2. Data in files: Work with a variety of file formats from plain text (.txt) to more structured and nested formats files like csv and JSON
 3. Data in databases: Get an overview of relational and NoSQL databases and practice data querying with SQL
 4. APIs: Collect data from the internet using Application Programming Interfaces (APIs)
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3. Data Story (30+ hours)

If there's one thing that most data scientists would have loved to know before they entered the field, it's that data science is not just about the math, the algorithms and the analysis, it's also about telling a good story. In real life, data scientists don't work in a vacuum - there's always a client, internal or external, waiting on the results of their work.

A data story is a powerful way to present insights to your clients, combining visualizations and text into a narrative. But storytelling is an art, and needs creativity. This section will try to get your creative juices flowing by suggesting some interesting questions you can ask of your dataset, and a few plotting techniques you can use to reveal insights.

4. Statistical Inference (46+ hours)

Statistics is the mathematical foundation of data science. Within statistics, inferential statistics is a set of techniques that helps us identify significant trends and characteristics of a data set. Not only is it useful to explore the data and tell a good story, it also paves the way for deeper analysis and actual predictive modeling. In this module, we cover several important inferential statistics techniques in detail.

Topics covered:

1. Theory of inferential statistics
 2. Statistical significance
 3. Parameter estimation
 4. Hypothesis testing
 5. Correlation and regression
 6. Exploratory data analysis
 7. A/B testing
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5. Machine Learning (120+ hours)

Machine learning combines aspects of computer science and statistics to extract useful insights and predictions from data. Machine learning is what lets us make useful predictions and recommendations, or automatically find groups and categories in complex data sets.

In this module, we'll cover the major kinds of machine learning algorithms (supervised and unsupervised), with several techniques within each of them. You'll learn when these algorithms are useful, the assumptions they incorporate, the tradeoffs they involve, and the various metrics you can use to evaluate how well your algorithm performs.

Topics covered:

1. Scikit-learn
 2. Supervised and unsupervised learning
 3. Top machine learning techniques: Linear and logistic regression, naive bayes, support vector machines, decision trees, clustering
 4. Ensemble learning with random forests and gradient boosting
 5. Best practices
 6. Evaluating and tuning machine learning systems
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6. Career Resources (35+ hours)

You'll receive career material at strategic points both in the curriculum as well as via calls with our career support coaches. We'll help you create a tailored job search strategy based on your background and goals, teach you how to evaluate companies and roles, show you how to effectively get and ace interviews, and explain how to negotiate an above-market salary.

Topics covered:

1. Anatomy of a tech company
2. Job search strategies that top candidates use
3. How to build your network and effectively use it to land interviews

4. Create a high-quality resume, LinkedIn profile and cover letter
 5. Interview coaching and practice, including mock interviews for both technical and non-technical topics
 6. Negotiation success tips
 7. Practice interview questions for each technical topic
 8. Algorithms and data structures to ace your coding interviews
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Capstone Project: Building a Data Product

133+ hours

The capstone project is a key part of our curriculum that every student must complete. The projects are designed to provide you with the experience of working in a realistic data science scenario. Working with your mentor, you'll pick a data set and a problem of interest. From start to finish, your project will be targeted to a specific client (real or imaginary). Using the data science techniques, you've learned, you'll not only come up with a reasonable solution to the problem but learn to present it to them as a compelling story.

You will work on two capstone projects that involve the following:

1. Formulating a problem based on exploratory data analysis;
2. Building a model and transforming data so that it can be input to an algorithm;
3. Iteratively evaluating performance, and adapting model/data input to figure out if more data or a different algorithm is needed to best solve the problem.

If you choose one of our specialization tracks, your second capstone project will be related directly to the specialization of your choice.

Advanced Machine Learning

You'll gain a broad exposure to the possibilities of data science beyond the basic algorithms, providing a base for further specialization. Some of the advanced topics covered include: Recommendation systems, social network analysis, time series data, and advanced data visualization. This track also includes an overview of deep learning and natural language processing. At the end of this track, you'll have a solid foundation to tackle a wide variety of problems in machine learning in many different industries.

Topics covered:

1. Recommender systems in Python
2. Basics of deep learning using Keras
3. Social network analysis using NetworkX
4. Natural Language Processing (NLP) using spaCy
5. Time series analysis using Pandas and regression
6. Advanced data visualization with Bokeh and D3.js
7. Data Science at Scale using Spark
8. Software Engineering for Data Scientists

Capstone Project Estimated time: 20 hours

Your second Capstone Project can be on any Data Science problem of your choice. However, in comparison to your first Capstone, we encourage you to try out some of the more advanced techniques you have learned, or investigate your problem more deeply. That demonstrates your progress clearly to potential employers and hiring managers looking at your portfolio.

Is the Data Science Career Track for me?

If you want to broaden your machine learning skills and learn about several fascinating applications, the Data Science Career Track might be the right one for you. Here's how you might know that this track is the right one for you:

1. You've been excited by the potential of the various machine learning techniques you've learned so far and eager to see more examples and domains where they're being used.

2. You're curious about practical, real-world applications rather than learning a lot of theory. How does Facebook analyze its social network? How do Netflix or Amazon recommend products?
3. As you've been working on your first Capstone Project, you've not been drawn to specific kinds of data sources (text, images etc) and you'd prefer to keep your skills broad.

The Generalist track is meant to be a solid overview of advanced, innovative techniques and applications in Machine Learning. Having a solid foundation in those will help you solve a wide variety of problems, and impress potential hiring managers.

Not sure if your background is a fit?

[Schedule a call](#) with our Admissions team or [email](#) Fabiola, our Admissions Manager, who will help you think through the decision.



Ready for the next step? Learn more and [apply here](#).

Email us at **hello@springboard.com** with any questions.