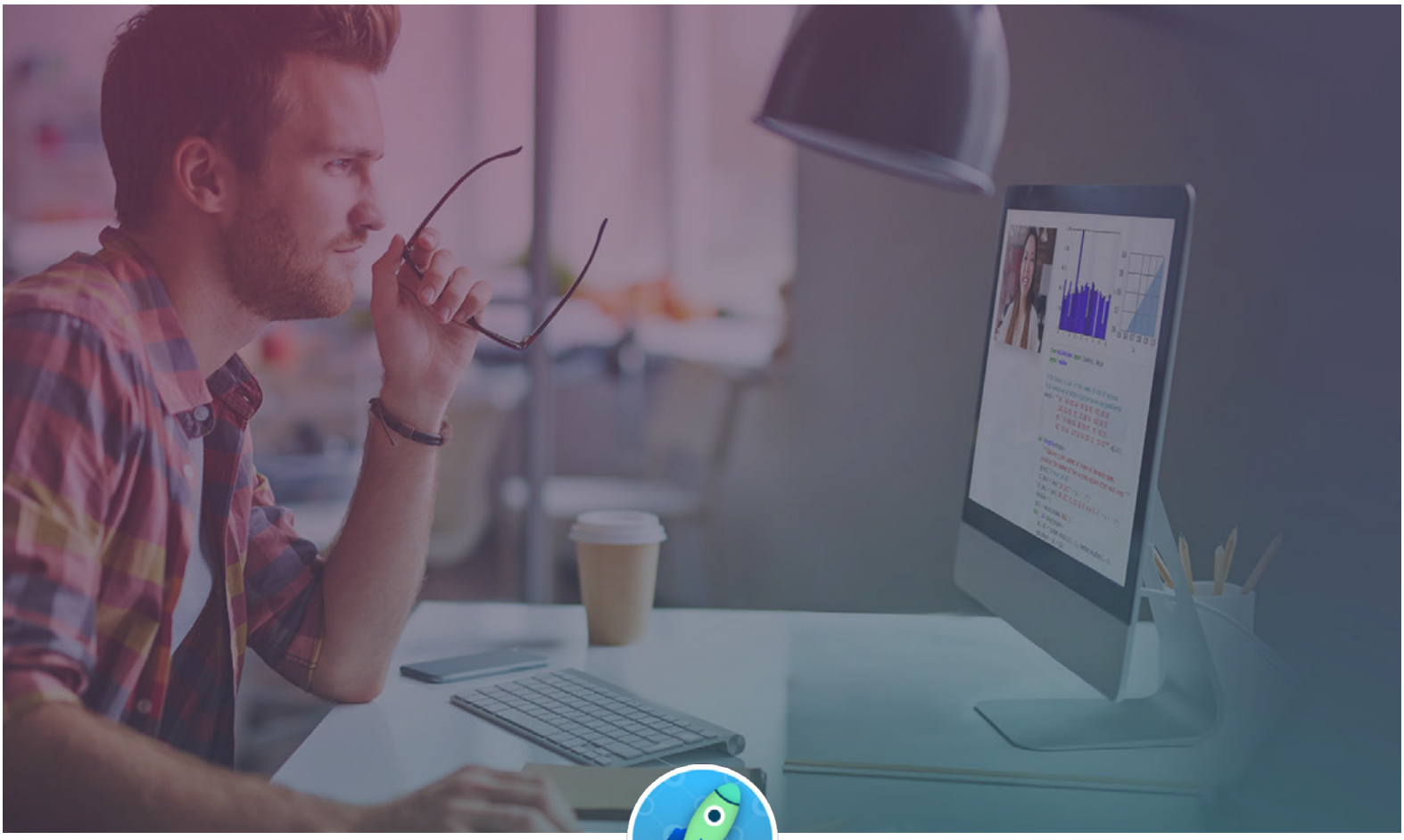


Data Science Career Track

Syllabus & Course Overview

Springboard

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.

We are so confident this program can launch you into a Data Science career that we will refund your tuition if you don't find a job within 6 months of graduating!

Springboard in numbers

8000+
Total students

500+
Mentors

500,000+
Hours of learning logged

80+
Countries our students call home

Springboard

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.

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

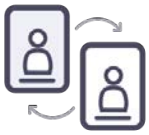
You'll be one of the fewer than 20% of applicants who secured a spot in the Data Science Career Track. Congratulations!

Start application

How it works

1. Cost and schedule: The course costs **$7500 and runs for 6 months**. We also have a per-month payment plan and financing options (read more here). 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 classes starting every month, and you can save a spot for a future cohort. **Enroll here**



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.

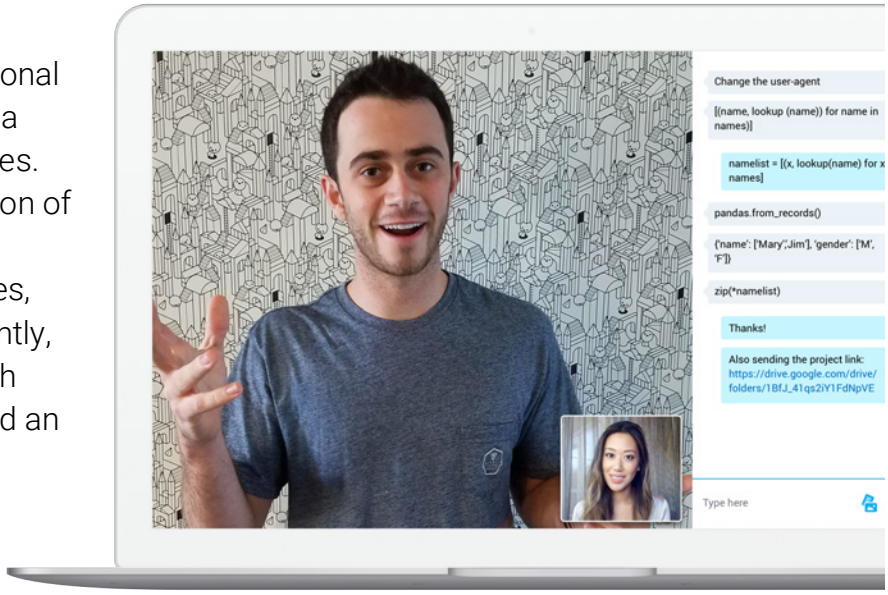
6. Career Services: You will get career resources as part of the curriculum, as well as 1-on-1 video calls with a career coach, where you will cover resume review, mock interviews and salary negotiation tips and more

6. 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 which 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

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Career services

While you work through the course, you'll get **9 personalized 1-on-1 career coaching calls** (and access to more if needed), offered at specific points as you complete the career curriculum to address your specific situation.

- ✓ Job search strategy call and LinkedIn profile review
- ✓ Check in call covering networking
- ✓ Check in call on identifying companies and job titles
- ✓ Resume review call
- ✓ Mock behavioral interview
- ✓ 3 mock technical interviews
- ✓ Negotiation practice call

Career coaching calls normally last 30 minutes, while mock technical interviews are 1 hour long.

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.

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
16+ 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
44+ 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
10+ 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

16+ 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

5. Machine Learning

60+ 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

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

Capstone Project: Building a Data Product

50+ 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.

Springboard

Choose your specialization

Hone your skills in a specific area of expertise by **choosing one** of our three specialization track options.

OPTION 1

The Advanced Machine Learning Track

This track expands on 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 this track for me?

If you want to broaden your machine learning skills and learn about several fascinating applications, the Generalist 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.

OPTION 2

The Natural Language Processing (NLP) Track

NLP uses techniques from computer science, linguistics, and machine learning to process human language, typically in the form of unstructured text. In this specialization, you'll learn the basics of text data, how to clean and process it, and how to extract insights from text sources and conversations. Common applications of NLP include: text classification (e.g. is this news article fake or real?), sentiment analysis (e.g. how much do customers like my product?), and topic modeling (e.g. what are some common themes people are talking about?). Learning this specialization will prepare you to join the data revolution in industries such as news and media, marketing, law, and others, all of which rely heavily on text data.

Topics covered:

1. How to work with text and natural language data
2. NLP in Python, using common libraries such as NLTK and spaCy
3. Basics of Deep Learning in NLP using word2vec and TensorFlow

4. Data Science at Scale using Spark
5. Software Engineering for Data Scientists

Capstone Project Estimated time: 20 hours

Your second Capstone Project will be in Natural Language Processing. This means that you'll be applying NLP techniques to a data set that has a significant amount of text in one or more human languages. Some NLP problems can also involve speech recognition or synthesis. Picking a project that can demonstrate your skills in NLP will be extremely valuable when you're talking to potential employers, and we recommend working with your mentor to select a suitable topic.

Is this track for me?

If you're particularly fascinated by text and language, then Natural Language Processing might be your specialization of choice. Here are some potential indicators for whether that might be the case:

1. You're fascinated by the intricacies of language and text, and all of the problems and techniques that exist in that domain
2. You're willing to invest significant time and effort into learning a variety of algorithms and techniques to represent language, ranging from term frequency vectors to deep learning-based techniques such as word2vec.
3. Your first Capstone Project was all about text analysis, whether it was a classification problem such as sentiment analysis or an unsupervised problem such as topic modeling.

NLP is a really fun and in-demand domain right now, with a lot of applications. However, it'll take some extra time and work to learn several specialized techniques.

OPTION 3

The Deep Learning Track

Deep learning is a set of advanced machine learning techniques that powers many of today's most cutting edge applications, including image recognition, machine translation, self-driving cars, speech recognition, and more. It is based on neural networks, which are loosely inspired by the structure of the human brain.

In this specialization, you'll establish a thorough foundation in deep learning and begin building real-world applications. This track is for you if you're interested in getting into the cutting edge of machine learning and AI today, and will prepare you for jobs involving complex and unstructured data, such as images, video, speech, and more.

Topics covered:

1. Basics of neural networks and deep learning, including algorithms such as BackPropagation
2. Implementing deep learning using Keras and TensorFlow
3. Common architectures such as RNNs and CNNs, and how to implement them
4. Data Science at Scale using Spark
5. Software Engineering for Data Scientists

Capstone Project Estimated time: 20 hours

Your second Capstone Project will be in an area that requires the application of Deep Learning. For example, you can choose to apply Deep Learning to an audio, image or video data set, work on a text-related problem using word2vec, or apply Deep Learning to any other data set where it could make a difference. We recommend that you work with your mentor to pick a project that displays your overall competence in both designing and implementing Deep Neural Networks.

Is this track for me?

If you're particularly interested in solving problems involving unstructured data such as images, audio or video, Deep Learning might be the specialization for you. How can you know that this is the case? Here are some potential indicators that might help:

1. You're very drawn to and feel comfortable with the theory and math of machine learning and want to learn as much as you can about it!

2. You're willing to devote a lot of time and effort tuning your algorithms for your second Capstone Project.
3. You've solved a problem related to unstructured data in your first capstone project.

Deep Learning is very powerful and in-demand, but is not for the faint of heart. It will require some serious investment of time, hardcore math and programming skills, and a willingness to plough through some difficult theoretical concepts.

Not sure if your background is a fit?

Write to us at katie@springboard.com. Katie, our Admissions Manager will help you think through the decision. Prefer a phone call? Schedule a call with Katie instead!

Schedule a call

Office Hours

You'll join other students and our host mentor, as we discuss a variety of topics. You can utilize this time to get a better understanding of what other students are working on, ask questions about data science, and learn more about getting into the industry!

1. Capstone Project Presentations

When you complete the course, you are invited to present your capstone project.

2. Q&A Sessions

You can ask your host mentor questions you may have regarding your casework, data analytics, interviews, and more!

Chris
Works at SESAC

"Springboard has some of the best mentors available, and a great curriculum that will really get you beyond just an entry level understanding of Data Science."

Andrew
Works at Pandora

"I loved the flexibility of learning online combined with the benefit of having a mentor. It increased my learning speed enormously. I'd recommend Springboard to anyone looking to skill up in Data Science."

Or choose from our other Data Science courses

Foundations of Data Science

Build your data science skills using R and start exploring data-related careers.

FOR WHOM?
Some background in programming (basic familiarity with variables, functions, loops, etc; any language ok) is helpful.

Learn more

Intermediate Data Science with Python

Develop your data science skills with Python and machine learning, and start building data products.

FOR WHOM?
You should know the basics of probability and statistics and be comfortable programming in at least one language.

Learn more

Ready for the next step?

Learn more and apply

Questions about Springboard?

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