

19 Free Data Science Courses by Harvard and IBM

[COURSES](#)[DATA SCIENCE](#)[MACHINE LEARNING](#)[PYTHON](#)

Introduction

Data science is a rapidly growing tech field that's transforming business decision-making. To break into this field, you need the right skills. Fortunately, top institutions like Harvard and IBM offer free online courses. These courses cover everything from basic programming to advanced machine learning. In this article, we've listed some of the best free courses from Harvard and IBM. They are great for beginners and intermediate learners who want to boost their data science skills.



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Harvard Free Courses

1. Introduction to Programming with Scratch

Harvard's CS50's [Introduction to Programming with Scratch](#) is a great starting point for anyone with zero programming experience. It uses Scratch, a visual programming language where you create code by dragging and dropping graphical blocks—ideal for beginners.

Course Overview

- **Functions:** Instructions that perform specific tasks.
- **Return Values:** Results provided by functions.
- **Conditions:** Logic that decides if actions should happen.
- **Loops:** Repeat certain actions.
- **Variables:** Store information.

Course Features

- Helps you create animations, games, and interactive art.
- Prepares you for advanced programming in languages like Java and Python.

Enrollment Details

- Free course with an option to get a certificate for \$299.
- Part of Harvard's broader CS50 curriculum.

Checkout the this free Harvard data science courses [here](#).

2. Introduction to Artificial Intelligence with Python

This course dives into artificial intelligence (AI) and machine learning (ML) with Python. It's designed for those who want to get hands-on with AI.

Course Overview

- **Graph Search Algorithms:** Navigate data structures.
- **Reinforcement Learning:** Learn how agents make decisions based on rewards and penalties.
- **Machine Learning Principles:** Explore techniques that help systems learn from data.
- **Designing Intelligent Systems:** Learn to build systems that think and learn.

Course Features

- Understand AI concepts and algorithms.
- Be proficient in Python for AI.
- Work on machine learning libraries and design intelligent systems.

Enrollment Details

- The course also offers a verified certificate for \$299.

You can find more details of this Harvard free data science courses [here](#).

3. Introduction to Data Science with Python

This course focuses on teaching practical skills in data science using Python. It gives you hands-on experience solving real-world problems.

Learning Outcome

- Coding in Python for statistics and modeling.
- Working with libraries like Pandas, NumPy, and Matplotlib.
- Running machine learning models like linear regression and classification models.

Enrollment Details

- A certificate is available for \$299.

[Click here](#) to explore this Harvard free data science course.

4. Machine Learning and AI with Python

In this course, you'll dive deeper into machine learning techniques and their applications.

Learning Outcome

- Build and evaluate machine learning models.
- Understand decision trees, random forests, and gradient boosting.
- Identify and reduce data bias in machine learning models.

Enrollment Details

- Certificate option is available for \$299.

Find all the details for this courses [here](#).

5. Data Science: Visualization

This course teaches the basics of effective data visualization using the R programming language and ggplot2 package. You'll learn to communicate data-driven insights through visuals.

Learning Outcome

- Create custom plots.
- Analyze real-world data from health, economics, and infectious diseases.
- Learn to spot flaws in common visualizations.

Enrollment Details

- Certificate available for \$219.

Explore this courses [here](#).

6. Data Science: Probability

Harvard's Data Science: Probability course provides a thorough understanding of probability theory and its importance in data science.

Learning Outcome

- Understand random variables, independence, and expected values.
- Conduct Monte Carlo simulations.

- Use the Central Limit Theorem in data analysis.

Enrollment Details

- Get a certificate for \$149.

[Click here](#) to explore this free data science course by Harvard.

7. Data Science: Inference and Modeling

This course covers statistical inference and modeling techniques, often using election forecasting as a case study.

Key Topics

- Estimations, margins of error, and confidence intervals.
- Bayesian modeling techniques.
- Aggregating data for better accuracy.

Enrollment Details

- A certificate is available for \$149.

[Click here](#) to explore this free Harvard University free course.

8. Data Science: Wrangling

Data wrangling is essential for any data science project. This course teaches you to clean and prepare data for analysis using R.

Learning Outcome

- Import and clean data from various sources.
- Use tidyverse tools for data manipulation.
- Perform web scraping.

Enrollment Details

- A certificate is available for \$149.

[Click here](#) to explore this free Harvard University free data science course.

9. Data Science: Machine Learning

This course provides an introduction to machine learning concepts and focuses on building predictive models.

Learning Outcomes

- Apply machine learning algorithms.
- Perform cross-validation.
- Build a movie recommendation system.

Enrollment Details

- Certificate available for \$149.

You can explore this free course [here](#).

10. Data Science: Linear Regression

Linear regression is a fundamental statistical method, and this course teaches how to use it to analyze real-world data.

Learning Outcome

- Understand linear regression theory.
- Implement linear regression in R.
- Evaluate model performance and make predictions.

Enrollment Detail

- Certificate available for \$149.

You can find details of this Harvard University free data science course [here](#).

IBM Free Courses

1. What is Data Science?

This course provides a broad introduction to the field of data science and covers its core principles.

Learning Outcome

- Understand what data science is.
- Recognize its importance across industries.
- Familiarize yourself with essential tools and techniques.

[Click here](#) to explore this IBM data science free course.

2. Analyzing Data with Python

Learn to analyze and visualize data using Python libraries like Pandas and Matplotlib.

Learning Outcome

- Manipulate data with Python.
- Perform data cleaning tasks.
- Create visualizations to extract insights.

[Click here](#) to explore this IBM data science free course.

3. Python for Data Science, AI & Development

This course is a comprehensive introduction to using Python for data science and AI applications.

Learning Outcome

- Using Python for data manipulation.
- Implementing machine learning algorithms.
- Creating effective data visualizations.

[Click here](#) to explore this IBM data science free course.

4. Python Basics for Data Science

Designed for beginners, this course introduces Python programming, with a focus on data science applications.

Learning Outcome

- Understand Python's syntax and data types.
- Use Python for data analysis.

- Implement basic data science techniques using popular libraries.

[Click here](#) to explore this IBM data science free course.

5. Data Analysis with Python

In this course, you'll master the basics of data analysis using Python.

Learning Outcome

- Manipulate data with Pandas.
- Perform exploratory data analysis.
- Use visualizations to communicate findings.

[Click here](#) to explore this IBM data science free course.

6. Applied Data Science Capstone

This capstone course allows learners to apply their data science skills in a real-world project.

Learning Outcome

- Complete a full data science project from start to finish.
- Apply various tools and techniques to solve complex problems.
- Communicate findings through visualizations and reports.

[Click here](#) to explore this IBM data science free course.

7. Visualizing Data with Python

Learn to create effective data visualizations using Python libraries like Matplotlib and Seaborn.

Learning Outcome

- Understand data visualization principles.
- Create different types of visualizations.
- Interpret visual data.

[Click here](#) to explore this IBM data science free course.

8. IBM Data Analyst Capstone Project

This capstone course lets you showcase your data analysis skills through a hands-on project.

Learning Outcome

- Conduct a full data analysis.
- Create visualizations to effectively communicate insights.
- Develop a complete data analysis project, solving real-world problems.

[Click here](#) to explore this IBM data science free course.

9. Introduction to Data Analytics

This course gives an overview of data analytics and its essential concepts.

You'll Learn To:

- Understand key data analytics terms.
- Apply analytical techniques.
- Interpret data insights and communicate findings effectively.

[Click here](#) to explore this IBM data science free course.

Helpful Resources to Master Data Science

- [Learning Path to Become a Data Scientist in 2024](#)
- [Free Data Science Solved Projects](#)
- [14 Must Have Data Scientist Skills in 2024](#)
- Become a Full Stack Data Scientist with our [AI/ML Backbelt Plus Program](#)

Conclusion

Whether you're a complete beginner or looking to upskill your data science knowledge, these free courses from Harvard and IBM can be really helpful. So, pick the course that fits your goals and start your data science journey today!

Happy Learning! ☐

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