

# Introduction To Data Science: grow your data skills stack

*Studium Generale, HWR Berlin, WS 2020/21*

Data science is about how to get data to work for us, to give us its hidden treasures. Data science has been called "[the sexiest job of the 21st century](#)". Even if you don't want to become a professional data scientist, it's helpful to master the basic concepts if you want to succeed in today's highly data-driven business environment. This first of two planned courses focuses on: data science basics, visualization and productivity tools. The course is for everyone who is interested in becoming more data literate and growing their skill stack.

## What will you learn?

- Organise data visually in a way that is clear and informative
- Find and use data sets from the real world (e.g. COVID-19 data)
- Easily and quickly format data into graphs
- Understand and present statistical information
- Understand how modern productivity tools can help you
- Complete a sample data analysis project in small steps

## What do you need to know?

No prior knowledge required. Both the necessary programming and statistical concepts are introduced in the course using examples and simple mini-projects. Previous programming experience is useful but not important. Curiosity is essential. You will gain data literacy skills by doing this course.

## What are the technical requirements?

- Internet connection to participate in classes and run software over a network
- Computer running Windows 10/8/7 or MacOS 10.13+ or Linux (e.g. Ubuntu 16+).

## What will we do?

- Learn key fundamental concepts through interactive lectures
- Work through basic examples and demo applications together
- Solve small data analysis problems
- Practice data science using a wide range of simple exercises
- Explore interesting data science projects

## What can you read?

**Course textbook:** Introduction to Data Science - Data Analysis and Prediction Algorithms with R, by Rafael A. Irizarry (CRC Press, 2020). ([Free ebook available](#))

## Recommended books:

1. Probability And Statistics For Data Science – Math + R + Data, by Norman Matloff (CRC Press, 2020).
2. The Book of R: A First Course in Programming and Statistics, by Tilman M. Davies, No Starch Press 2016.
3. Bayesian Statistics the Fun Way: Understanding Statistics and Probability With Star Wars, Lego, and Rubber Ducks, by Will Kurt, No Starch Press 2019.
4. The Art of Statistics: Learning from Data, by David Spiegelhalter, Penguin 2019.
5. The Book of Why: The New Science of Cause and Effect, by Judea Pearl & Dana Mackenzie, Penguin 2018.
6. The Model Thinker: what you need to know to make data work for you, by Scott E. Page, Basic Books 2018.
7. R in Action, by Robert I. Kabacoff, Manning 2020.
8. Exploring Data with R, by Richard Iannone, Manning, 2020.
9. Build a Career in Data Science, by. Emily Robinson and Jacqueline Nolis, Manning, 2020.

## Who will teach this course?

- Lecturer: Prof. Dr. Marcus Birkenkrahe
- Brief bio: Professor of business informatics at HWR Berlin since 2007. PhD in theoretical physics (1994). Executive at Accenture and Royal Dutch Shell (1995-2002). Executive Coach, lecturer and consultant (2003-2006). Favorite hobby: gaming (PS4). Favorite authors: Henry James, Fjodor Dostoyevsky, Theodor Fontane. Favorite films: Pride & Prejudice, Key Largo, LOTR. Favorite series: Person of Interest, Rick & Morty, IT Crowd. Favorite softwares: Emacs.org, Orgmode.org, GNU/Linux, R.
- [LinkedIn](#) | [Twitter](#) | [Researchgate](#) | [Blog](#) | [Github](#) | [About.me](#)

## When will the course be?

- Every Wednesday from 19:00-21:00 hrs starting 14-Oct-2020 until 10-Feb-2021
- 16 meetings altogether. No classes on: December 23 & December 30, 2020.

## Where will the course take place?

Moodle (asynchronous), Big Blue Button (synchronous). Live sessions will be recorded.

## How many credits can I earn?

1 ECTS credit for active participation (> 80% of available challenges)  
+ 1.5 ECTS credits for completing the final project with a passing grade (> 50%)  
= 2.5 ECTS credits max

## **What's next?**

This basic course is offered in the winter term only. A follow-up course is planned for summer 2021: "Introduction to machine learning". This course will focus on: data wrangling, prediction algorithms and even more productivity tools.