Data Science for Health Professionals: Curriculum

In Healthcare every decision matters. Do you believe there is a lot more potential in data than we are using right now? Do you have the ambition to be a pioneer in unlocking data and information to support decision making processes? This program is targeted at medical professionals and managers in healthcare eager to learn how to integrate data and analytics into their work

Foundation

The Foundation offers an orientation in data science, Big Data, new analytics and new business opportunities. You will learn predictive analytics, the theory of supervised and unsupervised learning, and their practical applications. You practise applying machine learning in the data-analytic workflow embodied by the CRISP-DM model.

Curriculum (6 days in class):

- o Data science: new forms of data, new analytics and new business opportunities
- o Data Science Projects and Machine Learning
- o Data preparation & principles of machine learning
- o Supervised learning
- o Unsupervised learning
- o Interpretable machine learning & evaluation
- o Practical application of machine learning in a CRISP-DM project
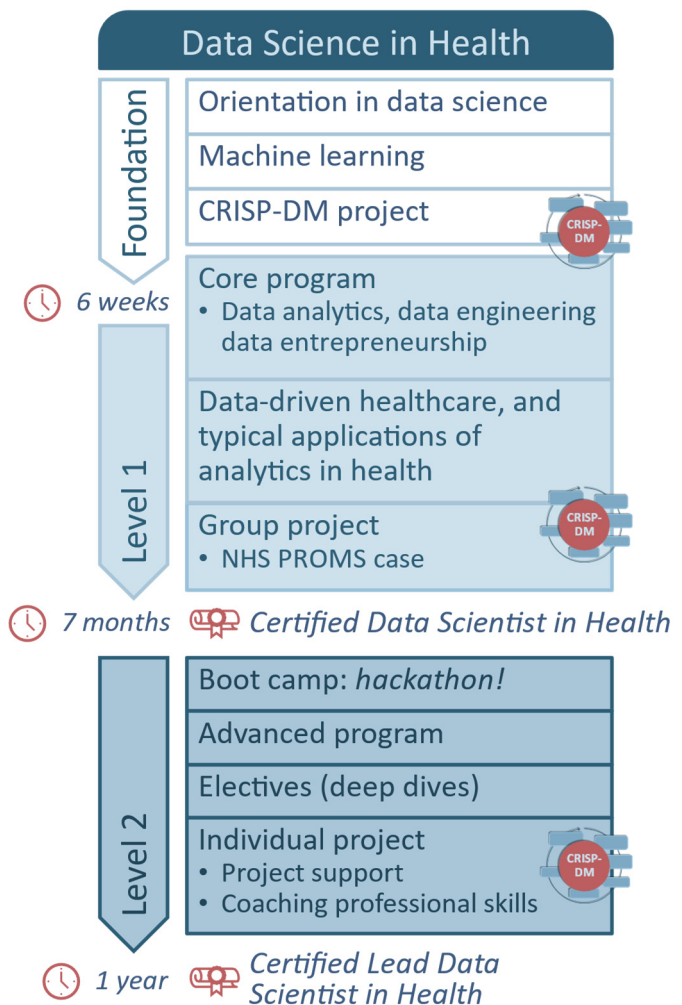- o Statistical learning: Prediction, causal inference & validity

It is not required to master programming skills. We will work in a Python environment, but learning to code in Python is not part of the course.

Level 1

The core program in data analytics, data engineering and data entrepreneurship trains you as an all-round data scientist. You also learn about typical applications specific for healthcare. Upon completion of this level, you become a *Certified Data Scientist in Health*.

Curriculum (12 days in class):

- o Leading data-science projects: how to get things done?
- o Visualization
- o Data modelling and relational database management
- o Time-series forecasting
- o Data and privacy law
- o Decision quality
- o Introduction to deep learning
- o Text mining and natural-language processing (NLP)
- o Healthcare applications, such as computational personalization, ethics, and playful intelligence.

Data Science in Health

Foundation
- Orientation in data science
- Machine learning
- CRISP-DM project

⏱ 6 weeks

Level 1
- Core program
  - Data analytics, data engineering data entrepreneurship
- Data-driven healthcare, and typical applications of analytics in health
- Group project
  - NHS PROMS case

⏱ 7 months 🎓 *Certified Data Scientist in Health*

Level 2
- Boot camp: *hackathon!*
- Advanced program
- Electives (deep dives)
- Individual project
  - Project support
  - Coaching professional skills

⏱ 1 year 🎓 *Certified Lead Data Scientist in Health*

- o Professional skills: sharing and understanding thoughts, questions, ideas and solutions. Resulting in goal setting, presentation skills and pitching.
- o Together with a team of classmates, you develop a realistic data-science solution in a complex and challenging group project in healthcare.

Level 2

If you decide to continue to the second level, the last module offers a number of deep-dives in advanced-level topics, including privacy law & data security, process mining and advanced data architectures. In a two-day bootcamp you do a hackathon with your classmates. The Level 2 training revolves around learning to lead a data-science initiative and achieve real impact. With the support of JADS experts and professors you implement a data-science application in your own organization and help your organization create business value from data and analytics. Upon completion of this level, you become a *Certified Lead Data Scientist in Health*.

Curriculum (11 days in class):
- o Leading data science: winning support and realizing your organization's data ambitions
- o Data management and data governance
- o Data entrepreneurship: developing novel business models driven by data and analytics
- o Anomaly detection
- o Process mining
- o Advanced data architectures
- o Electives program: professors and experts offer a varied program of deep-dives, from which you select two courses
- o Two-day bootcamp where you do a hackathon with your classmates.
- o Professional skills: Lectures and individual coaching in taking a leading role in the development of your organization's data ambitions.
- o In-company project supported by JADS professors and experts