



 5-DAY COURSE

# Enabling Innovation with Data Science

Harness data to improve decisions and processes within your organization

## TARGET AUDIENCE

Experienced professionals and executives wishing to steer data science initiatives and generate business impact

The course will be given in English.

## PREREQUISITES

- Prior experience working with data in a practical context, such as data reporting, visualization, and statistical analysis using structured data, is required.
- Participants are required to bring their own laptop for use during hands-on practical exercises.

## ORGANIZATION

- Swiss Data Science Center (SDSC), an ETH domain initiative joining Ecole Polytechnique Fédérale de Lausanne (EPFL), Eidgenössische Technische Hochschule Zürich (ETH) and Paul Scherrer Institut (PSI)



## OVERVIEW

In today's world, data is everywhere, yet the ability to harness its potential for informed decision-making, and consequently, its significant impact on business, remains elusive to most organizations. But how should an organization start to become data-driven? What are the best practices for implementing data science models that benefit the entire organization? And how to negotiate executive buy-in for data science initiatives?

This 5-day course focuses on achieving impact and innovation with data science. It features theoretical lectures on selected applications of data science (e.g. natural language processing and computer vision) and practical lectures on leveraging data science within a business context (project management, impact evaluation, performance metrics, stakeholder management).

## OBJECTIVES

- Understand the foundational principles and techniques of data science within the broader context of artificial intelligence (AI) and machine learning, including deep learning applications
- Be able to objectively assess complexity and scalability of AI use cases
- Acquire the tools to manage AI projects from scoping to Minimum Viable Product (MVP) solution deployment
- Explore real-world applications through hands-on machine learning assignments and discover concrete data science applications
- Connect and share with other industry professionals



### 5-day course :

- Fri. April 19, 2024, 9am to 5pm
- Fri. April 26, 2024, 9am to 5pm
- Fri. May 3, 2024, 9am to 5pm
- Fri. May 17, 2024, 9am to 5pm
- Fri. May 24, 2024, 9am to 5pm



Certificate of attendance



CHF 4000.–

10% special discount for contributing members of EPFL Alumni, as well as EPFL VPI partners and SDSC partners

LEARN MORE



EPFL, Lausanne, Switzerland



On-line registration

Registration deadline : February 19, 2024

Number of participants is limited

## PROGRAM

### DAY 1 : INTRODUCTION TO DATA SCIENCE AND DIGITAL TRANSFORMATION

- Data science history, terminology and basic concepts, overview of learning tasks
- Hands-on session with no-code platform (KNIME) - supervised learning
- Digital transformation - becoming data-driven, project management strategies and tools

### DAY 2 : FUNDAMENTALS OF MACHINE LEARNING (PART 1)

- Strengths and limitations of different supervised learning algorithms (including deep learning) and performance metrics, with hands-on session (KNIME)
- Best practices for industrialisation of solutions and reusability of digital assets
- Presentation of use cases delivered by SDSC

### DAY 3 : FUNDAMENTALS OF MACHINE LEARNING (PART 2)

- Strengths and limitations of different algorithms for unsupervised learning and time series forecasting, with hands-on session (KNIME)
- Fostering adoption : model explainability techniques, AB testing for business impact assessment
- Canvassing exercise - how to start a project on the right track

### DAY 4 : NATURAL LANGUAGE PROCESSING (NLP) AND GENERATIVE AI

- History of NLP, algorithms and applications, with hands-on session (KNIME and ChatGPT)
- Generative AI in NLP and other areas. State-of-the-art LLMs, such as GPT-4
- Presentation of use case delivered by SDSC
- Group discussion and feedback on canvassed projects by participants

### DAY 5 : COMPUTER VISION

- Computer Vision (CV) algorithms and applications, with a hands-on beginner-friendly interactive programming session (in python)
- Presentation of use cases delivered by SDSC
- Group discussion and feedback on canvassed projects by participants

## PROGRAM DIRECTOR

**Prof. Olivier Verscheure,**  
*Executive Director, Swiss Data Science Center (SDSC)*

## INSTRUCTORS

- **Prof. Olivier Verscheure,**  
*Executive Director, SDSC*
- **Dr. Alexander Barnes,**  
*Senior Data Scientist, SDSC*
- **Dr. Matthias Galipaud,**  
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