Applied Course on

Advanced Process Data Analytics

14th – 15th April 2026

2 days, in person @ The Engine

Aim

The aim of this course is to provide an overview and practical demonstration of advanced data analytics and modeling methodologies for process data. Fundamental concepts to visualize, high-dimensional and highly correlated process and product quality data, to identify the important process drivers as well as forecast the process and product quality behaviour will be presented in lectures. Hands-on coding and brainstorming sessions will be used to solve case studies from the (biopharmaceutical) industry. After the course, the participants will be aware of relevant techniques and literature for process data analysis and will be able to evaluate different analysis paths for a given problem.

Scope

- Special analysis techniques for process data
- Advanced multivariate data analysis techniques
- Machine learning techniques
- Hybrid process modeling based on process data and process know-how
- Model-based process understanding & optimization
- Model-based process monitoring & forecasting
- Application of techniques to industrial cases

Who should attend?

The target group of the course encompasses scientists and engineers from academia and industry who encounter or are working with (bio)process data.

The course shall motivate to utilize the presented techniques in ongoing and perspective projects. Previous experience in data analysis can be advantageous but is not mandatory.

Format

This is an in-person course, hosted at The Engine in Cambridge, Massachusetts. The course structure includes lectures, industry examples, and case studies, as well as hands-on sessions (Different software packages will be provided to the participant). The content emphasizes practical applications while also offering a solid theoretical overview. Supervisors and graduate assistants will support the participants during the interactive workshops and data analysis sessions.

Participants have a unique opportunity to **join the DataHow Symposium on the 16th of April**, at no extra cost. Network and exchange with industry professionals and extend this learning opportunity.

Principal Lecturers

Michael Sokolov, Ph.D., MBA
COO of DataHow and Lecturer at ETH Zurich

Michael is an expert in bioprocess modelling and a regular speaker on the potential of smart digital pharma solutions at international conferences. He conducted his research in close collaboration with the pharma industry and co-authored more than 25 publications.

Alessandro Butté, Ph.D., MBA
CEO of DataHow & Lecturer at ETH Zurich

Besides a long-standing research experience in polymer, separation, and biotechnological processes, Alessandro has several years of experience in the pharma industry. He is a co-author of more than 70 publications and 4 patents.

Harini Narayanan, Ph.D.
Lead of Algorithms R&D at DataHow

Harini is an expert in machine learning and hybrid modeling for bioprocesses, with a strong academic career complemented by extensive industrial collaboration. She has co-authored numerous publications applying machine learning methodologies across a wide range of biomanufacturing applications.

Venue and Organization

For the first time, the course will take place in the United States at **The Engine in Cambridge, Massachusetts**. Founded by MIT, The Engine is a non-profit incubator and accelerator built to support "Tough Tech" innovations emerging from transformative science and engineering. It brings together advanced laboratory infrastructure, deep technical expertise, funding, and a highly collaborative community, creating an ideal environment for translating complex technologies into real-world impact. Hosting the course at The Engine places participants at the heart of one of the most influential innovation ecosystems for bioprocessing, biotechnology, and advanced engineering.

Course date and program

A preliminary program will be provided and the course outline is available at the link:
https://datahow.ch/courses/summer2025_program/
The course will be distributed over **2 days.**

Course fees

The course fees are:

- Industry: USD 3'750.00 This course is tailored to professionals in (bio)processing spanning process development through manufacturing.
- Academia: USD 2'250.00 The course is accessible to educators and researchers affiliated with universities.
- Students: USD 850.00 The course is available to students upon request. Please send your request with confirmation of your university to: m.speich@datahow.ch

The fee includes lecture and case study summaries in electronic formats as well as the cost of all communication platforms and software packages used in the course.

Terms and Conditions

Confirmation: A signed confirmation of completion will be delivered to each participant after the course.
Number of participants: A minimum of 8 will be accepted in the course.
Cancellation policy: Cancellation of registration must be submitted in writing or via email to m.speich@datahow.ch

Cancellations made later than 3 weeks before the course start will be subject to a 30% cancellation fee. A colleague may be substituted without penalty. Full refunds will be made in the case that the course is cancelled, e.g., due to insufficient enrolment.

Registration

Registration is binding unless the minimum of participants cannot be reached. When registering you agree to receive any information regarding the course and other marketing campaigns of DataHow.

In case of questions or for additional information please contact:

Madleina Speich
HR and Administration Manager
E-mail: **m.speich@datahow.ch**

We are looking forward to numerous registrations, a great knowledge transfer, and a great exchange with our experts.

Your DataHow-team.

DataHow AG
Hagenholzstrasse 111
CH-8050 Zürich
Switzerland
Web www.datahow.ch
E-Mail: info@datahow.ch

Agenda of the Advanced Process Data Analytics Course
Agenda of Spring 2026 US Edition:

Monday, April 14: Advanced Course (Day 1)

09:00 – 12:40	**Multivariate Process Data Analysis**
09:00 – 09:30	Introduction of the lecturing team and participants
09:30 – 10:15	Process data specialties and Roles of Process Models
10:30 – 11:15	PCA and PLSR
11:15 – 11:40	PLS2 and variable importance
11:40 – 12:40	Hands-on Experience & Industrial Use Cases

13:30 – 18:00	**Machine Learning (ML) Methods**
13:30 – 14:30	Introduction into Machine learning
14:30 – 15:30	Examples of Machine learning tools
15:45 – 16:45	Gaussian Processes
17:00 – 18:30	Hands-on Experience & Industrial Use Cases
18:30 -	Social Program

Tuesday, April 15: Advanced Course (Day 2)

09:00 – 12:30	**Hybrid Modeling**
09:00 – 10:00	Basic Principles of Hybrid models
10:00 – 11:00	Industrial Examples of Hybrid Models - USP
11:15 – 11:45	Industrial Examples of Hybrid Models – DSP
11:45 – 12:30	Hands-on Experience & Industrial Use Cases

13:30 – 18:00	**Applications of smart digital solutions in bioprocessing**
13:30 – 14:30	Bayesian Optimization for Experimental Design
14:30 – 15:15	Digital Twins and Real time Applications
15:30 – 16:00	DataHowLab Demo
16:00 – 18:00	Mini Hackathon

------------------------- Symposium participation is included for course participants.--------------------------

Wednesday, April 16: Digital Bioprocessing Symposium US by DataHow @ The Engine
08:30 – 18 :00 CET   See: https://datahow.ch/news-and-events/symposium/