

20th Advanced Process Data Analytics **Course**

• 26–28 October & 2–4 November 2026

• 6 half-day sessions

• Virtual

A hands-on program in data analytics and hybrid modeling for process and product quality data, built for scientists and engineers working with (bio)process data in academia and industry.

OBJECTIVE

Aim

The aim of this course is to provide an overview and advanced insight into 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 behavior 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.

CURRICULUM

Scope

- ✓ Special analysis techniques for process data
- ✓ Introduction to multivariate data analysis
- ✓ Introduction to 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

AUDIENCE

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.

No prior experience required. Previous experience in data analysis can be advantageous but is not mandatory.

DELIVERY

Format

The course takes the form of lectures, industry examples, and case studies as well as hands-on sessions with software tasks (different software packages will be provided to the participant). Supervisors and graduate assistants will support the participants during the interactive workshops and data analysis sessions.

The course will be intense in content, interactive in learning, and interdisciplinary in application and vision.

PROGRAM

Course Date & Program

A preliminary program is found on the last page of this document. The course will be distributed over **6 days with half-day teaching sessions**, running 26–28 October and 2–4 November 2026.

DELIVERY PLATFORM

Venue & Organization

The course will be offered as an interactive presentation through Microsoft Teams. Group activities will be handled in small virtual rooms. The provided software from DataHow as well as the open-source packages can be used during and after the course.

Despite the limitations of such a teaching format, it is our clear intention to deliver the content in similar comprehensibility to an in-person event and allow for many questions and discussions.

Participants are welcome to bring their own case studies for the brainstorming sessions and dedicated Q&A sessions.

FACULTY

Principal Lecturers

**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.

**Michael Sokolov, Ph.D., MBA**

COO of DataHow & Lecturer at ETH Zurich

Michael is an expert in bioprocess modeling 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.

**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.

**Fabian Feidl, Ph.D.**

CTO of DataHow & Bioprocess Digitalization Expert

Fabian leads DataHow's technology organization, bringing deep expertise in bioprocess digitalization to the design of the course's hands-on software sessions.

PRICING

Course Fees

INDUSTRY

CHF 2'950

Tailored to professionals in (bio)processing spanning process development through manufacturing.

ACADEMIA

CHF 1'750

Accessible to educators and researchers affiliated with universities.

STUDENTS

CHF 700

Available to students upon request, subject to enrollment confirmation.

Students must send a confirmation of enrollment at a university to our course management at m.speich@datahow.ch. The fee includes lecture and case study summaries in electronic format, as well as the cost of all communication platforms and software packages used in the course.

POLICIES

Terms & Conditions

Confirmation

A signed confirmation of completion will be delivered to each participant after the course.

Participants

A minimum of 8 participants will be accepted in the course.

Cancellation

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 canceled, e.g., due to insufficient enrollment.

ENROLLMENT

Registration

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

In case of any questions, please contact:

COURSE RESPONSIBLE

Madleina Speich

Course Registration & Enrollment

m.speich@datahow.ch

PRELIMINARY PROGRAM — AUTUMN 2026 EDITION

Agenda • Days 1–3

Monday, Oct. 26 — Advanced Course (Day 1)

DAY 1

14:00–18:00 CET **Multivariate Data Analysis (MVDA) Methods**

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|-------------|--|
| 14:00–14:30 | Introduction of the lecturing team, program and participants |
| 14:30–15:30 | Motivation for MVDA and process data specialties |
| 15:45–17:00 | PCA, missing data handling, quiz |
| 17:00–18:00 | Hands-on experience & industrial use cases |

Tuesday, Oct. 27 — Advanced Course (Day 2)

DAY 2

14:00–18:45 CET **Advanced MVDA Methods**

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|-------------|--|
| 14:00–14:45 | Multivariate regression — MLR, PCR, PLSR |
| 14:45–15:15 | PLS2 |
| 15:30–16:15 | Variable importance + quiz |
| 16:15–17:00 | Why do we need non-linear process models? |
| 17:15–18:45 | Hands-on experience & industrial use cases (use case team) |

Wednesday, Oct. 28 — Advanced Course (Day 3)

DAY 3

14:00–18:30 CET **Machine Learning (ML) Methods**

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| 14:00–15:00 | Introduction to Machine Learning |
| 15:00–16:00 | Examples of machine learning tools + quiz |
| 16:15–17:30 | Gaussian Processes |
| 17:30–18:30 | Hands-on experience & industrial use cases |

PRELIMINARY PROGRAM — AUTUMN 2026 EDITION

Agenda • Days 4–6

Monday, Nov. 2 — Advanced Course (Day 4)

DAY 4

14:00–18:30 CET **Combination of Data and Knowledge-Driven Approaches**

14:00–15:00 Basic principles of hybrid models

15:15–16:45 Examples of hybrid models (USP and continuous processes) + quiz

17:00–18:30 Hands-on experience & industrial use cases

Tuesday, Nov. 3 — Advanced Course (Day 5)

DAY 5

14:00–18:15 CET **Applications of Smart Digital Solutions in Bioprocessing**

14:00–14:30 Digital twins in bioprocessing

14:30–15:30 Examples of hybrid models (DSP)

15:45–16:45 Machine learning models for spectral data

16:45–17:00 Kalman and particle filters

17:00–18:15 Hands-on experience & industrial use cases

Wednesday, Nov. 4 — Advanced Course (Day 6)

DAY 6

14:00–18:30 CET **Smart Digital Solutions to Support Decision Making**

14:00–14:45 Bayesian inference and model-based experimental design

14:45–16:00 DataHowLab intro

16:15–18:15 Mini Hackathon (use case team)

18:15–18:30 Feedback & certificates