



AI fundamentals for Biotechnology

26 - 27 November 2026

Cees Haringa
Marcel Ottens

AIM OF THE COURSE

The objectives of this course are to familiarize yourself with the basics of AI, allow you to understand AI developments in the field, and provide you with the foundations to apply AI in your own project.

The course covers theory in an interactive setting, showcases AI applications in bioprocess industry and provide some exercise.

The interactive setting implies that 1-2 hours of preparatory video's will be provided some weeks before the course starts, to watch beforehand, to maximize your learning

The course is taught by leaders from academia and industry to give you a broad perspective on the latest developments of the state of the art of AI in biotechnology.

COURSE DESCRIPTION

This two-day course is intensive and offers full-day programs. To ensure active participation by those attending, a combination of theoretical (lectures) and practical work is offered. Some preparatory video's will be shared some weeks before the course to maximize your learning.

LECTURES

During the lectures, the following topics and more will be addressed:

Fundamentals

- Introduction to machine learning
- Supervised and unsupervised learning basics
- Hybrid modeling
- Large language models & multi-agent systems

Applications

- Protein structure prediction
- Bayesian modelling for bioprocesses
- Forecasting-model predictive control with neural networks
- Capacity prediction in biopharma

Expert panel discussion

WHO SHOULD ATTEND?

This course is aimed at industrial and academic professionals (MSc, PhD or equivalent experience). The course is aimed at those active in academia and industry who like to familiarize themselves with the current state of the art of AI in their field.

A background in e.g. biochemical engineering, industrial microbiology or biochemistry and a basic working knowledge of the other disciplines is required.

COURSE BOARD

Cees Haringa
Marcel Ottens
Department of Biotechnology
Delft University of Technology
Delft, the Netherlands

TU DELFT

Artur Schweidtmann
Peter-Leon Hagendoorn
Tom Viering

COURSE COORDINATION

Yvonne van Gameren
Jenifer Baptiste
BioTech Delft, Delft University of Technology
Department of Biotechnology
Delft, the Netherlands

LECTURERS

Francisca Candeias
J&J Innovative Medicine
Leiden, the Netherlands

Laura Helleckes
Department of Chemical Engineering
Imperial College
London, United Kingdom

Jens Smiatek
University of Stuttgart
Stuttgart, Germany

Dongda Zhang
University of Manchester
Unilever
Manchester, United Kingdom

Mark Duerkop
Novasign
Vienna, Austria

Liang Wu
dsm-firmenich
Delft, the Netherlands

Hans Roubos
dsm-firmenich
Delft, the Netherlands

Victor Puig I laborda
DTU Biosustain
Copenhagen, Denmark

PROGRAM

THURSDAY 26 NOVEMBER 2026

Theme: Fundamentals to AI

- 09:00** Registration
09:30 From data to discovery: how AI is impacting biotechnology
Cees Haringa
10:30 Interactive classes:
Intro to Machine Learning, supervised & unsupervised
Tom Viering
11:15 Regression, classification, basic terminology, Evaluation
Tom Viering
12:15 Gradient Descent, neural network (ANN)
Tom Viering
13:00 Group picture & Lunch
14:15 Hybrid modelling
Mark Duerkop
15:15 Reconstructing gradients in bioreactors using machine learning techniques
Victor Puig I laborda
16:15 Large language models & multi-agent systems
Artur Schweidtmann
18:00 Course dinner in old town

FRIDAY 27 NOVEMBER 2026

Theme: Applications in Biotech

- 09:00** AI-Powered Biotechnology in Industry:
Accelerating Science, Innovation and Impact
Liang Wu and Hans Roubos
09:45 Protein structure prediction
Peter-Leon Hagedoorn
10:45 Capacity Prediction
Francisca Candeias
11:30 Bayesian modelling for bioprocesses
Laura Helleckes
12:15 Lunch
13:30 Forecasting-model predictive control with NN
Jens Smiatek
14:30 Do's and Don'ts in hybrid modelling in industrial context
Dongda Zhang
15:45 Q&A Expert Panel
16:45 Wrapping up

LOCATION

The course will be held at the
Delft University of Technology
Department of Biotechnology
Van der Maasweg 9
2629 HZ Delft, The Netherlands



COURSE REGISTRATION

Please register via the website to attend the course. Applications will be handled in order of the date of receipt.

COURSE FEE

The course fee can be found on the [website](#). The fee includes course materials, lunches and the dinner on Thursday. The fee does not cover other meals and lodging.

When the number of participants is too low to have a fruitful course, BioTech Delft will cancel the event no later than six weeks before the start of the course. The course fee will be reimbursed within three weeks after cancellation.

In case a speaker will not be able to present his/her lecture due to unforeseen circumstances, BioTech Delft will arrange an equivalent replacement.

The digital course book will be supplied at the start of the course.



BioTech Delft organises biotechnology education at postgraduate level. BioTech Delft closely cooperates with the department of Biotechnology of Delft University of Technology. Since its foundation, in 1987, BioTech Delft has very successfully organised various types of postdoctoral education.

Currently BioTech Delft offers Advanced Courses given each year, covering the multidisciplinary spectrum of biotechnology. The courses have a long track-record dating back to 1988.

- *Microbial Physiology and Fermentation Technology (1988)*
- *Downstream Processing (1989)*
- *Biocatalysis and Protein Engineering (1999)*
- *Bioprocess Design* (2014)*
- *Modelling and Computation for Micro-organisms in Bioprocesses (2018)*
- *Multi-Omics approaches for Improvement of Industrial Microbes (2020)*
- *Cellular Agriculture: Precision fermentation and cultured meat (2024)*
- *EPS for resource recovery (2025)*
- *Biopharmaceutical Bioprocessing (2025)*
- *AI Fundamentals for Biotechnology (2026)*

* in partnership with Wageningen University & Research

FURTHER INFORMATION

Jenifer Baptiste, BA

Course coordination

T +31 15 278 1922

E biotechdelft@tudelft.nl

W biotechdelft.com

Department of Biotechnology, Delft University of Technology
Van der Maasweg 9
2629 HZ Delft, The Netherlands

T +31 (0)15 278 1922 E biotechdelft@tudelft.nl

Advanced
Courses in
Biotechnology

biotechdelft.com