

ADVANCED COURSE

Biopharmaceutical Bioprocessing

8 - 12 February 2027

Michel Eppink
Marcel Ottens
Marieke Klijn

AIM OF THE COURSE

Recent advances in the biopharmaceutical field (Cell and Gene Therapies, Vaccines and Biopharmaceutical Proteins) has increased the number of innovative human medicines for different diseases (e.g. cancer, auto-immune, infections).
Process development, scalability, and implementation of these innovative medicines is a main issue for different companies due to the lack of process knowledge, thereby delaying the commercial introduction of new medicines.

Experts from academia, industry, and regulatory agencies have joined forces and will present a program that addresses biopharmaceutical bioprocessing in depth, covering drug discovery, upstream/downstream processing, analytics, as well as regulatory and clinical perspectives. The focus of the course is on the design of innovative processes for cell therapies, gene therapies, vaccines, and biopharmaceutical proteins, complemented with examples of mammalian processes for biopharmaceuticals. A substantial part (ca. 40% of the time) will be dedicated to a case study, executed in teams of 2-3 participants.

This case study is about the design of a bioprocess for the production of a therapy from one of the four different fields. This includes the upstream/downstream process design and you will take into account the needed process analytics and an overall process economic evaluation. The team with the best design performance wins the Biopharmaceutical Bioprocessing prize. There are several guest lecturers from leading universities and companies in the bioprocess field, providing latest insights in technology innovations, cell lines and new bio-product categories, complemented with views from the industrial practice.

BioTechDelft
POSTGRADUATE EDUCATION

TU Delft

COURSE DESCRIPTION

This one-week course is intensive and offers full-day programs. To ensure active participation by those attending, a combination of theoretical (lectures) and practical work (exercises, case study) is offered. Some online preparatory materials will be given to ensure all participants have access to have the same basic knowledge.

LECTURES

The core lectures are mainly scheduled in the mornings and will focus on the following themes:

- Overview of the different therapies present in the field of Biopharmaceuticals
- Upstream and Downstream Process understanding needed for Biopharmaceuticals
- Scale-up processes and their scale up features
- Analytics, including process analytical technologies, needed to monitor the process development and product characterization

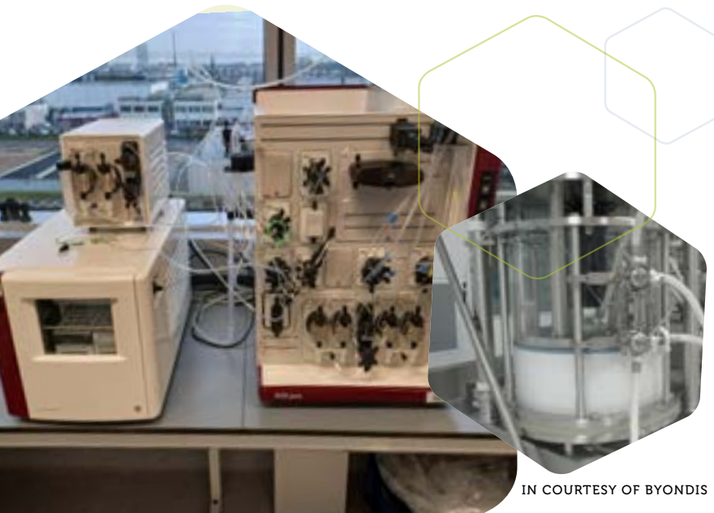
Invited lectures are scheduled on e.g. examples of successful bioprocesses, downstream processing, upstream processing, patient perspective, regulatory, drug development and economic aspects of bioprocessing.

CASE STUDY

The case study will be developed in such a way that the lectures in the morning will give the information needed to develop the case study step by step in the afternoon. The course will be given in English.

WHO SHOULD ATTEND?

The course is primarily aimed at academic and industrial professionals (MSc, PhD or equivalent experience) who seek for refreshing and broadening their know-how and practical insight in Biopharmaceutical Bioprocessing, to enable progress towards the development of human medicines. A background in e.g. bioprocess engineering, pharmaceutics or biochemistry and a basic working knowledge of the other disciplines is expected.



IN COURTESY OF BYONDIS

COURSE BOARD

Michel Eppink
Marcel Ottens
Marieke Klijn
Bioprocess Engineering
Section Department of Biotechnology
Delft University of Technology
Delft, the Netherlands

TU DELFT

Cees Haringa
Martin Pabst

COURSE COORDINATION

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

LECTURERS

Chris Klijn
Novartis

Jan Schouten

Ingrid Overes
Stefanie Bartels
Byondis

Martijn Wapenaar
Valentine Tuyishime
J&J Innovative Medicine

Emile van der Akker
Sanquin

Mathieu Streefland

Dirk Martens
WUR

Silvia Pirrung
AGC Biologics

Mariken Segers

Ralph Slijkerman
Wacker

Rupali Desai
UniQure

Cari Sänger-van de Griend
Ewoud van Tricht
Kantisto BV

Marcel Hoefnagel
CBG-Med

Paulien van Meij
LUMC

PROGRAM

MONDAY 8 FEBRUARY 2027

Theme: Drug discovery & cell line development
08:45 Registration
09:00 Introduction to the course
Michel Eppink
09:10 Introduction to biopharma products & business
Michel Eppink
10:15 Drug discovery
Chris Klijn
11:15 Patient perspective
tbd
12:15 Group picture & Lunch
13:00 Cell line Development
Stefanie Bartels
14:00 Innovations in Cell Line Development
Jan Schouten
15:00 Case study
16:30 Group presentations
18:15 Social event

TUESDAY 9 FEBRUARY 2027

Theme: Upstream processing
09:00 Basics of bioreactor processes
Marieke Klijn
10:00 Protein production
Martijn Wapenaar
10:45 Red blood cells
Emile van den Akker
11:30 Cell and gene theory
Mathieu Streefland
12:15 Lunch
13:00 Vaccines USP
tbd
13:45 Case study
15:45 Modelling of mammalian cell metabolism
Dirk Martens
16:45 Scale-up/scale-down
Cees Haringa
17:30 End of the day

WEDNESDAY 10 FEBRUARY 2027

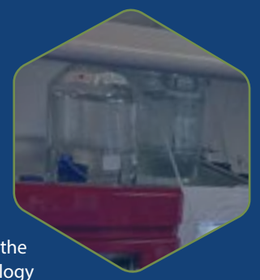
Theme: Downstream processing
09:00 Intro to DSP in biopharma
Michel Eppink
10:00 Late Stage Process Development
Silvia Pirrung
11:00 Vaccines DSP
Mariken Segers
11:45 AAV DSP
Rupali Desai
12:30 Lunch
13:30 DSP for microbial products
tbd
14:15 Modelling in DSP
Marcel Ottens
15:00 Case study
17:00 End of the day

THURSDAY 11 FEBRUARY 2027

Theme: Analytics & Process Economics
09:00 Baciss of (a)QbD
Cari Sänger-van de Griend/Ewoud van Tricht
10:00 Analytics and specifications for ADCs (case study)
Eef Dirksen
11:00 Introduction to PAT
Marieke Klijn
11:30 Monitoring and control
Marieke Klijn
12:00 Protein Mass Spectrometry
Martin Pabst
12:45 Lunch
13:30 Case study
15:30 Process costs and improvements
Michel Eppink
16:15 Operations and Plant digitalization
Valentine Tuyishime
18:00 Course dinner

FRIDAY 12 FEBRUARY 2027

Theme: Regulatory and case study presentation
09:00 Introduction ot regulatory landscape
Marcel Hoefnagel
09:45 Case study on protein-based products
Ingrid Overes
10:45 Case study on ATMPs
Paulien Meij
11:30 Patient Perspective (Patient engagement)
tbd
12:15 Lunch
13:00 Case study
15:15 Presenting the case study
16:45 Evaluation and certification



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. We can host a limited number of participants. A short motivation letter can be requested after registration, before we can confirm your participation.

COURSE FEE

The course fee can be found on the website. The fee includes course materials, lunches, the drinks on Monday and course 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.

Preparatory texts will be sent after receipt of the course fee, a month before the start of the course. The complete 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)*

** 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



Advanced Courses in Biotechnology

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