



CERTIFICATE OF UPSTREAM BIOPROCESSING 3-DAY COURSE

4 - 6 JUNE 2024 - SPACES AVAILABLE
19 - 21 NOVEMBER 2024 - SPACES AVAILABLE

LOCATION: FLEXBIO (HERIOT-WATT UNIVERSITY, EDINBURGH)

Price: **£2100** per attendee (academic rate available)*

The number of attendees per course is limited to secure hands-on opportunities for each person. Lunch and refreshments will be provided. Please contact scaleup@ibioic.com for further details and sign-up. For more information about other IBioIC Skills and Training programmes, scan the QR code or click on the link below



[IBioIC Skills and Training](#)

* Terms and Conditions apply

About this course

The course is aimed at early career professionals and anyone who wants to develop an understanding of upstream bio-manufacturing techniques and processes.

This 3-day course consists of 6 lectures, enhanced with practical demonstrations using bench-scale, pilot-scale, and single-use bioreactors. In particular, attendees will gain hands-on fermentation experience using a 30L-scale, stainless steel, stirred tank bioreactor. The course includes the set-up, steam sterilisation in place (SIP), inoculation, monitoring and harvest of a 30L yeast fermentation.

On completion of the course, the attendees will be presented with a 'Certificate of Upstream Bioprocessing' issued by IBioIC.

Learning outcomes

- Obtain an up-to-date overview of microbial and mammalian cell cultivation in the field of bio-manufacturing.
- Know the considerations and possible challenges of upstream bioprocessing scale-up.
- Be aware of various cell types, cell metabolism, fermentation modes and bioreactor types.
- Be aware of the importance of preparation, sterilisation, monitoring and quality control in fermentation processes.
- Develop hands-on fermentation skills through practical experience using a stainless-steel pilot bioreactor.
- Familiarise with sampling techniques used in fermentation and biomass quantification methods.
- Learn and apply fundamental aseptic and sampling techniques.

Who will benefit?

- Scientists, engineers, graduates, technical managers, operators, especially those in their early careers in fermentation and upstream bioprocessing.
- Anyone who would like to gain an insight into the theoretical and practical aspects of bio-manufacturing.

COURSE SCHEDULE

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Lecture 1: (9.15-10.00)

Overview of upstream bioprocessing.
Albert Serrano Gomez, Senior Fermentation Scientist, IBioIC

Lecture 2: (10.15-11.00)

Basic cell types, cell metabolism and practical aspects of microbial fermentation.
Lorenzo Miele, Fermentation Scientist, IBioIC

Practical 1: (11.15-12.00)

Preparation of inoculum and fermentation media

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Lecture 3: (9.15-10.00)

Fermentation modes and introduction to scale-up.
Lis Vivas, Fermentation Scientist, IBioIC

Invited Lecture 4: (10.15-11.00)

Scale-up considerations.
Glenn Robinson, Sales and Service Manager, Getinge

Practical 1: (11.15-12.00)

Pilot bioreactor start-up and pre-inoculation sampling

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Invited Lecture 5: (9.15-10.00)

Mammalian cell cultures and scale-up technologies.
Caitlin Connolly, Roslin Technologies

Lecture 6: (10.15-11.00)

Overview of downstream processing.
Kelly Stewart, Senior Downstream Processing Scientist, IBioIC

Practical 1: (11.15-12.00)

Sampling and analysis from pilot bioreactor

LUNCH BREAK

🕒 PM

Practical 2: (13.00-16.00)

Pilot bioreactor introduction, set-up, and Steam-In-Place using Applikon 30L bioreactor

Practical 3: (14.30-15.30)

Introduction to 2L bench scale bioreactor using Eppendorf DASGIP 8x2L parallel system

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Practical 2: (13.00-15.00)

Examination of inoculum and pre-inoculation samples

Practical 3: (15.00-16.00)

Inoculation, initial sampling and analysis from pilot bioreactor

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Practical 2: (13.00-16.00)

Pilot bioreactor harvest, Clean-In-Place and dismantling.

Practical 3: (14.30-15.15)

Introduction to single-use wave bag bioreactor using Applikon Appliflex