

SOUTHERN AFRICAN BIOMANUFACTURING TRAINING HUB

science, technology & innovation

Department:
Science, Technology and Innovation
REPUBLIC OF SOUTH AFRICA

CSIR
Touching lives through innovation

SOUTHERN AFRICAN
BIOMANUFACTURING TRAINING HUB



The CSIR-hosted **Southern African Biomanufacturing Training Hub (SA-BTH)** is pleased to announce the commencement of a course titled: Building biomanufacturing skills: Bioreactor operation and scale-up using immersive virtual reality (A-BTH03), scheduled to start on **Monday, 8 February 2027** as part of its Strengthening Biomanufacturing Capabilities in Southern Africa programme, supported by KfW Development Bank.

The programme aims to support training and development in the biomanufacturing sector, focusing on developing a skilled and competent workforce in Africa.

BUILDING BIOMANUFACTURING SKILLS: BIOREACTOR OPERATION AND SCALE-UP USING IMMERSIVE VIRTUAL REALITY

The SA-BTH's goal in providing this course is to help grow and develop the biomanufacturing sector in Africa through cutting-edge training in partnership with local and international stakeholders

The course is offered to African manufacturers, scientists and other key players involved in the development and scaling-up of biomanufacturing processes and products.

A key aspect of this programme is to provide theoretical and hands-on training, as well as skills development that will enable local manufacturing of biologics, vaccines, recombinant proteins and therapeutics.

This programme is aligned with a number of other initiatives that focus on establishing vibrant biomanufacturing industries in Africa.

COURSE DESCRIPTION

The Bioreactor operation and scale-up short course provides scientists, technicians and biomanufacturing professionals with the essential knowledge and practical skills required to operate, monitor and scale bioprocesses from laboratory to pilot scale. Participants will gain an understanding of bioreactor systems, instrumentation, process control, media preparation, sterilisation and process monitoring.

The course also introduces the fundamentals of bioprocess scale-up and process optimisation. Through a combination of lectures and practical sessions, participants will develop competencies in the selection and use of different bioreactor systems (Stirred tank single-use and multi-use configurations) and demonstrate their operation through virtual reality simulations and hands-on practical training.

They will understand key process parameters and apply fundamental scale-up principles from laboratory to commercial scale. Participants will also develop the ability to recognise and troubleshoot common operational challenges, while understanding essential cleaning, sterilisation and safety procedures through simulated and practical scenarios in a controlled, risk-free learning environment. Upon completion, participants will be equipped to support efficient, reliable and scalable biomanufacturing operations.

This course will be delivered using an online (five days) and in-person (five days) model of applied and advanced knowledge transfer in the form of online lectures and hands-on training.

KEY AREAS OF DEVELOPMENT INCLUDE:

- Identifying the components and functions of different types of bioreactors (stirred tank, single-use and multi-use);
- Operating bioreactors using virtual reality simulations and hands-on training;
- Understanding key operational parameters (pH, dissolved oxygen (DO), agitation, aeration and temperature);
- Applying process scale-up principles from laboratory to commercial scale;
- Recognising common operational issues and troubleshooting in VR and in-person scenarios; and
- Understanding cleaning, sterilisation, and safety procedures without risk exposure.



COURSE DATE AND DURATION

DATES: 8 TO 12 FEBRUARY 2027 (ONLINE) AND 15 TO 19 FEBRUARY 2027 (ON-SITE TRAINING)

DURATION: 5 days (online) and 5 days (in-person) at the CSIR Pretoria campus, South Africa

COURSE DELIVERY

The course is delivered using a hybrid format to transfer advanced knowledge, which includes:

- Online lectures;
- Hands-on training; and
- In-person classroom-based lectures.



COST AND FINANCING

Please note that a maximum of [20] candidates will be selected. For South African candidates, the funding package includes:

- Course fees (all);
- For 10 South African participants, outside of Gauteng, flights and accommodation for on-site training;
- For these 10 participants, one return ground transport from the airport to the accommodation; and
- Daily ground transport from the accommodation to the CSIR (designated course venue)

Scholarships will be awarded to five participants from Africa based on the motivations submitted.

Subsistence and travel allowances will not be covered.

WHO SHOULD ATTEND?

Preference will be given to the following candidates:

- Current staff in the biomanufacturing sector requiring skills expansion or upgrading;
- Developing staff in the biomanufacturing sector; prior work experience will be an advantage
- Identified staff or new recruits for a biomanufacturing facility; and
- Staff from biomanufacturing facilities currently under construction that will require a skilled workforce.

Applications from qualified persons from all African Union member states will be accepted. Young African women are encouraged to apply. Participation will only be available to candidates holding a Masters or PhD in biological science or related engineering degree

For enquiries, please email **BIDC@csir.co.za**

IMPORTANT DATES

- **DEADLINE FOR SUBMISSION OF APPLICATIONS: 9 DECEMBER 2026**
- **SELECTED CANDIDATES WILL BE NOTIFIED BY 14 DECEMBER 2026**

APPLICATIONS should be submitted by completing the application form available here.