

MENGSC IN INDUSTRIAL BIOTECHNOLOGY AND BIOMANUFACTURING

Programme Learning Outcomes

Programme Learning Outcomes for the MEngSc in Industrial Biotechnology and Biomanufacturing (NFQ Level 9, Major Award)

On successful completion of this programme, students should be able to:

- Select, design, construct and develop microbial strains for application in biotechnology.
- Develop and implement bioprocesses at increasing scales.
- Integrate strain and bioprocess development in an holistic way by combining biological and engineering principles.
- Implement state of the art methodologies for both strain engineering and bioprocess development, monitoring and smart control.
- Critically evaluate the parameters required for bioprocess development including concepts like techno-economic feasibility and Life Cycle Assessment.
- Apply the latest concepts in data analytics and bioprocess monitoring including aspects of digitalisation and digital twinning.
- Work professionally and effectively in a team, to undertake research and development to build new bioprocess for novel applications.
- Appreciate the importance of the societal aspects of industrial biotechnology, including concepts like the regulatory environment, ethical research, and safe and sustainable by design.
- Analyse quantitative measures of microbial strain growth and productivity and explain the relationships between microbial physiological and productivity parameters.
- Complete a body of independent research in an area related to biotechnology or biomanufacturing and present research findings in a dissertation