The aim of this course is to provide individuals with an introduction to scale-up concepts in industrial settings and their successful implementation for the production of biotechnological products. The course will be lecture-based with visual aids to help the attendees to understand the principles of industrialization of biotechnological processes that have made their way from lab scale to industrial size production.

The course will be structured into sections based upon the topics presented. The first section (“Basics”) will address topics on bioreactor design including aspects such as KPIs, ratios, mass and energy balances, agitator & sparger design and sterilization of equipment & media. The second section (“Industrial real case stories”) will deal with actual operational issues of industrial processing systems that also covers issues involved in scale-up to industrial production size reactors and the production of compounds such as probiotics, chemicals, bioplastics and biofuels.

Discussions about microorganisms applied, culture media, feedstock, foam control strategies, shear, mixing, aeration, different types of fermentations and the reactor controls involved as well as downstream processing strategies will be also addressed.
SYNPOL’s Course on “Industrialization of Biotechnological Processes: basics and real case stories from bench to industry”

Venue
Auditorio Fundación Parque Científico de Murcia
Complejo de Espinardo
Ctra. de Madrid, Km 388
30100 Espinardo, Murcia (Spain)

Registration
Registration contact before course: drzyzga@cib.csic.es
Attention: No course fee, but limited access!
08:30 Registration Opening

Course Management
Chairmen: José Luis García (CIB-CSIC, Madrid, Spain)
          Ricardo Egea (Bionet SL, Murcia, Spain)
Moderator: Oliver Drzyzga (Project Manager; CIB-CSIC, Spain)

Refreshment Breaks
11:10 Coffee Break (sponsored by Bionet SL)
13:00 Lunch (only free for speakers)

Morning session: “Basics”
09:00 Opening Announcements
José Luis García (SYNPOL Project Coordinator; CIB-CSIC, Spain)
09:15 Optimization of Lab Processes before their Way Up to Pilot Scale
Manuel Cánovas (University of Murcia, Spain)
09:50 Bioreactor Process Control – Principles from Lab to Industrial Scale
Daniel Egger & Manfred Zinn (INFORS AG & HES-SO, Switzerland)
10:35 Up-scaling in Cross Filtration Process Design for Fermentation Broth
Ruth Ordoñez (BIONET SL, Spain)
11:40 Bioprocess Data Analysis for Fast Process Development, Safe Scale-Up and Robust Manufacturing
Patrick Sagmeister (Exputec GmbH, Austria)
12:20 Project Management: Principles for Scaling-up a Bioprocess
Ricardo Egea (BIONET SL, Spain)

Afternoon session: “Industrial real case stories”
14:15 Probiotics Production via Biotechnological Fermentations
Marta Tortajada (Biopolis SL, Spain)
14:45 Production of Bioplastics: Scale-up from Pilot to Industrial Volume
Kevin O’Connor (Bioplastech Ltd, Ireland)
15:15 Second Generation Biofuels Production in Salamanca, Spain
Elena Puerta (Abengoa SL, Spain)
15:45 DRANCO Technology for Anaerobic Digestion of Organic Waste
Steven Verstichel (Organic Waste Systems NV, Belgium)
16:15 C1-Gas Fermentation for Fuel and Chemical Production at Scale
Christophe Mihalcea (LanzaTech Inc, USA)
16:45 Closing of the course
José Luis García (SYNPOL; CIB-CSIC, Spain)
(Deliver of assistance certificates)