

Control and Instrumentation

Code: 100958
ECTS Credits: 6

Degree	Type	Year	Semester
2500253 Biotechnology	OT	4	0

Contact

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Use of languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Prerequisites

It is necessary to know Catalan because the classes are in this language.

Also, the following subjects must have completed:

Bioprocesses Engineering Fundamentals

Bioreactors

Objectives and Contextualisation

Know different types of process control. Analysis of dynamic behavior of a process with and without control.
Know different types of instrumentation used in bioprocesses.

Content

Lesson 1: Introduction. Definitions and concepts.

Lesson 2: Mathematical models developmentBioreactor modeling.

Lesson 3: Analysis of dynamic behavior of a process. In-out models. Nonlinear systems linearization. Laplace transforms. Solving linear differential equations using Laplace transforms. Transfer functions. Dynamic behavior of first and second order systems.

Lesson 4: Feedback control. Types of feedback control. Dynamic behavior of processes controlled by feedback. Effect of the different control actions. Stability analysis. Feedback control design.

Lesson 5: Other control systems. Control systems with a multiple loops. Feedforward control.

Lesson 6: Physical elements in a control system. Sensors and control valves.