IIQ 2673 BIOSEPARATIONS

Credits and contact hours: 10 UC credits / 10 hours (3 h. Lectures; 1,5 h. Labs and 5,5 h. Independent learning experiences)

Instructor’s name: José Manuel del Valle

Course coordinator’s name: To be defined


Course Catalog Description: Bioseparations presents in a rigorously way the basic principles of selected processes and specially adapted for the isolation and purification of active principles from biological materials. Specifically, we review in detail the cell disruption processes and mechanical separation of suspended solid material; concentration and purification processes of primary and secondary metabolites and other bioactive compounds using semipermeable membranes, solvents or precipitating agents, and adsorbents; and polishing processes by crystallization and dehydration. These contents enable the student to identify and preliminary design the equipment used in processes sequences to obtain a desired product with a satisfactory compromise between performance, productivity and product purity.

Prerequisite Courses: IIQ2022 Unit Operations II y/o IIQ2032 Unit Operations III, o Professor authorization

Co-requisite Courses: None

Status in the Curriculum: Minimum course

Course Learning Outcomes:
1. Integrate critic and proactively the downstream processes in a fermenter in a biotech company.
2. Know the bases and principles of downstream processes of the fermenter and industrial equipment used for obtaining raw or highly purified products from fermented broths.
3. Set physical models to obtain quantitative relationships between operating conditions and performance of a process or separation equipment.
4. Sizing equipment that meets an appropriate compromise between yield and purity of a selected active ingredient.
Relation of Course to ABET Criteria:

- h. Broad education necessary for global, economic, environmental and societal context
- i. Recognition of the need for, and an ability to engage in life-long learning
- k. Techniques, skills, and modern tools for engineering practice.

Topics covered:
