

Bioseparations

16:155:533

Syllabus

Instructor: Haoran Zhang

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Textbook: Bioseparations Science and Engineering

Roger Harrison et al. Oxford University Press

Course Description:

Introduction of commonly used operations in biological processes for separation and purification of various materials. Demonstration of how bioseparation principles can be used for realistic industrial processes.

Course Objectives:

Gain fundamental understanding of bioseparation principle and practice to answer the following questions.

- What is bioseparation?
- What are the common compounds that need to be separated from bioprocess?
- How do the compounds get separated based on their individual physical, chemical and biological properties?
- What the common steps for bioseparations?
- How to choose different bioseparation operations for different target products/processes?

Grading

Total 100%: Homework (30%); Mid-term Exam (20%); project (20%); Final (30%)

Homework should be submitted at the beginning of the class on the designated date. There is a 50% penalty for late submission. Homework submitted one week after the due day will NOT be graded.

Projected Schedule (subject to change)

Lecture	Topic	Textbook chapter(s)	HW assigned	HW due
1	Introduction	1		
2	Analytical Methods	2		
3	Cell lysis and flocculation	3	HW1	
4	Filtration	4		
5	Sedimentation	5	HW2	HW1
6	Extraction	6		
	Mid-term exam			HW2
7	Liquid chromatography	7		
	Spring recess			
8	Precipitation	8	HW3	
9	Crystallization	9		
10	Drying	10	Project assigned	HW3
11	Bioprocess design	11		
12	Lab exercises in bioseparations	12		
	Project presentations			
	Final exam			