



Jordan University of Science and Technology
Faculty of Pharmacy
Pharmaceutical And Biological Manufacturing Department

MANU242 Biotechnology & Biopharmaceuticals I

Second Semester 2025-2026

Course Catalog

3 Credit Hours. Biotechnology & Biopharmaceuticals I introduces students to the core scientific principles that underpin pharmaceutical biotechnology and biopharmaceutical manufacturing. The course builds essential knowledge in molecular biology, genetic engineering, expression systems, and foundational bioprocessing steps used to produce therapeutic proteins and biological drug products. Students will learn how genes are engineered, how proteins are expressed in living systems, and how upstream and downstream processes contribute to biopharmaceutical production.

Teaching Method: On Campus

Text Book

Title	Pharmaceutical Biotechnology: Fundamentals & Applications, 5th Edition 2019.
Author(s)	Daan J. A. Crommelin, Robert D. Sindelar, Bernd Meibohm
Edition	5th Edition
Short Name	Ref # 1
Other Information	

Instructor

Name	Dr. Yara Al Tall
Office Location	PH4 L1
Office Hours	
Email	yraltall@just.edu.jo

Class Schedule & Room

Section 1:
Lecture Time: Mon, Wed : 10:30 - 12:00
Room: M1302

Prerequisites

Line Number	Course Name	Prerequisite Type
822620	HSS262CHEM Biochemistry	Prerequisite / Study

Tentative List of Topics Covered

Weeks	Topic	References
Week 1	Introduction to Biologics	From Ref # 1

Weeks 2, 3	Molecular Biology Foundations	From Ref # 1
Week 4	Protein Structure & PTMs	
Weeks 5, 6	Gene Cloning & Insert Preparation	From Ref # 1
Week 7	Gene Transfer Methods	From Ref # 1
Week 8	Expression Systems & Cell Line Development	From Ref # 1
Week 9	Upstream Processing	From Ref # 1
Week 10	Downstream Processing I (Capture & Clarification)	From Ref # 1
Weeks 11, 12	Downstream Processing II (Purification and validation)	From Ref # 1
Week 13	Contaminants & Product Variants	From Ref # 1
Week 14	Basic Quality Control & Biosafety	

Mapping of Course Outcomes to Program Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Apply genetic engineering and recombinant DNA techniques (Weeks 5-7)	20%	
Explain the basic principles and applications of biotechnology (Weeks 1-4)	20%	

Relationship to Program Student Outcomes (Out of 100%)											
PLO MANU1.1	PLO MANU1.2	PLO MANU2.1	PLO MANU2.2	PLO MANU3.1	PLO MANU3.2	PLO MANU3.3	PLO MANU4.1	PLO MANU4.2	PLO MANU4.3	PLO MANU4.4	PLO MANU4.5

Policy	
Communicating with instructors	<ul style="list-style-type: none"> - Students should communicate via their official JUST email addresses. Communication through personal email accounts (Gmail, Hotmail, etc.) or social media will NOT be accepted, and no response will be provided. - Students are required to check their emails and the course's E-learning page regularly for announcements and notifications.
Exams	<ul style="list-style-type: none"> - All exams are closed-book and notes. - The final exam is comprehensive (covers all the material). - Do the first, second, and midterm incomplete exams need approval from the department heads. - The final incomplete exams need approval from the dean.
Cheating	- Prohibited; the commitment of the acts of cheating and deceit such as copying during examinations, altering examinations for re-grade, plagiarism of homework assignments, and in any way representing the work of others as your own is dishonest and will not be tolerated. Standard JUST policy will be applied.
Attendance	<ul style="list-style-type: none"> - Attendance is mandatory and will be recorded regularly. - Excellent attendance is expected. - Students who miss more than 20% of the classes will be dropped from the course as per JUST policy. - If you miss class, it is your responsibility to find out about any announcements or assignments you may have missed.
Withdrawal	- The last day to drop the course is before the twelfth (12th) week of the current semester.

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