

Course Description (biotechnology)

Performance review of higher education institution (assessment of the academic program)

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Al-Zahrawi University College
2. University Department / Center	Pharmacy
3. Course Name / Code	\(biotechnology)\ PCLS 512
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	5 th class, 2 nd semester (2023-2024)
7. Total Number of Study Hours	2 hours per week for each group
8. Date of preparing this description	2024-2025
9. Course Objectives: Understanding the basics of biotechnology and studying the conditions and properties of high molecular weight protein-based drugs (antibiotics, vaccines, hormones, and other substances).	
1. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- 1- Study of the properties of drugs manufactured using DNA recombination technology (hormones, antibiotics, vaccines, and other substances).
- 2- Study of the technical conditions and how biopharmaceuticals are absorbed.
- 3- Theoretical study on how to manufacture, store, and administer antibiotics produced through DNA recombination technology.

B. Subject-Specific Skills

- ☐ 1-Teaching skills in biotechnology
- ☐ 2-The student should have the ability to describe and illustrate models.
- ☐ 3-The student should have the ability to link causes with natural effects..

Teaching and Learning Methods

1. Discussion and dialogue method.
2. Troubleshooting and treatment.
3. Seminars.

C. Evaluation Methods

1. Oral discussions in the classroom and written exams.
2. Midterm exams and end-of-semester exams.
3. Daily assignment reports.

D. Thinking Skills

- D1. Encourage students to find problems related to the subject of study
- D2. Encourage students to find solutions to those problems
- D3. Conduct experiments individually and collectively.
- D4. Compare results and troubleshoot

E. General and Transferable Skills

- D1. The student should be able to think logically to solve problems
- D 2. The student should acquire manual work skills.
- D 3. The student should be able to develop and innovate skills

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Knowledge	Introduction to biotechnology	Blackboard and Screen Presentations	Daily exam and oral questions
2	2	Knowledge	Synthesis of biopharmaceutics and bacterial contamination	Blackboard and Screen Presentations	Daily exam and oral questions
3	2	Knowledge	Sterilization and bacterial disinfectant	Blackboard and Screen Presentations	Daily exam and oral questions
4	2	Knowledge	Additives and excipients	Blackboard and Screen Presentations	Daily exam and oral questions
5	2	Knowledge	Solubility enhancers	Blackboard and Screen Presentations	Daily exam and oral questions
6	2	Knowledge	Oral intake products	Blackboard and Screen Presentations	Daily exam and oral questions
7	2	Knowledge	Other route of administration (nasal/ respiratory/rectal/ buccal)	Blackboard and Screen Presentations	Daily exam and oral questions
8	2	Knowledge	Pharmacokinetics of biopharmaceutics	Blackboard and Screen Presentations	Daily exam and oral questions
9	2	Knowledge	Biopharmaceutics excretion	Blackboard and Screen Presentations	Daily exam and oral questions
10	2	Knowledge	Protein degradation and examples of peptides as drugs	Blackboard and Screen Presentations	Daily exam and oral questions

12. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

13. Infrastructure	
Required Readings:	References: Pharmaceutical biotechnology : fundamentals and applications. 4th ed (2013) by Crommelin et. al
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:

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