


Philadelphia University	 PHILADELPHIA UNIVERSITY THE WAY TO THE FUTURE	Approval date:
Faculty: Pharmacy		Issue: <u>Summer</u>
Department: Pharmacy		Credit hours: 3
Academic year 22/23		Course Syllabus

Course information

Course#	Course title	Co /Pre-requisite
0510220	Pharmaceutical Biotechnology	0510513
Course type		Class time
<input type="checkbox"/> University Requirement <input checked="" type="checkbox"/> Faculty Requirement <input checked="" type="checkbox"/> Major Requirement <input type="checkbox"/> Elective <input type="checkbox"/> Compulsory		8:45 -9:15, M/W 12:45-14:15 S,T
		Room #

Instructor Information

Name	Office No.	Phone No.	Office Hours	E-mail
<i>Dr. Mohammad Shomali</i>	5 th Floor Nursing	2318	11:45-12:45 S/T/Th	<i>mshomali@philadelphia.edu.jo</i>

Course Delivery Method

Course Delivery Method			
<input checked="" type="checkbox"/> Physical	<input type="checkbox"/> Online	<input type="checkbox"/> Blended	
Learning Model			
Precentage	Synchronous	Asynchronous	Physical
	0	0	100%

Course Description

<p>course is an introductory to nucleic acid (DNA and RNA) manipulation and how genes are expressed in v I explain the tools and methods that are used by working with nucleic acid. course will introduce students also to techniques that are used in the diagnostic of genetic mutation (ge ses). tudents will learn the technology used in preparing protein based drugs and other pharmaceutical substa for treat and diagnose diseases. dition, they learn how the pharmacodynamics and pharmacokinetics of protein based drugs. يهدف هذا المساق الى تعريف الطالب ب المادة الوراثية في الخلية. كما ان هذا المساق يعرف الطالب ب كيفية تعبير الجينيات. كما سيتم شرح الطرق و الادوات البحثية التي تستخدم في الكشف عن الامراض الوراثية. و سوف يتعلم الطالب على الطرق في انتاج الادوية البروتينية وبلاضافة الى ذلك سيتعلم الطالب حركية الدواء لمثل تلك</p>
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Course Learning Outcomes

Number	Outcomes	Corresponding Program outcomes
Knowledge		
K1	Understand the principle of biotechnology, the meaning of protein-based drugs	Kp1, Kp2, Kp3
K2	Introduce the methods of protein production and purification, and formulation of biotechnology products	Kp1
K3	Application of monoclonal antibodies, nucleic acid and stem cells in the therapy	Kp1, Kp2, Kp3
K4	Understanding of the meaning of pharmacogenetics and gene therapy	Kp1, Kp2
K5	Knowing the ethics in the use of biotechnology	Kp4
Skills		
S1	Students will have a basic understanding of the biotechnological scientific method	Sp2, Sp3, Sp1
S2	Students will have the opportunity to practice thinking critically and analytically and reason logically using current information and past experiences.	Sp2
S3	Students will have practice in assessing basic sources of information and how to evaluate and use this information.	Sp5, Sp8
S4	Knowing the methods used in biotech production and the impact of the protein based drug on the cell	Sp2
Competencies		

Learning Resources

Course textbook	Pharmaceutical Biotechnology, third edition. Crommelin J.A., Sindelar, RD and Meibohn, B, Informa Healthcare USA New York, 2008
Supporting References	<p>Lehninger Principles of Biochemistry, Fourth Edition by David L. Nelson, Michael M. Cox Publisher: W. H. Freeman; 4th edition 2005 ISBN: 0716743396</p> <p>Pharmaceutical Biotechnology by Groves, 2006 Taylor and Francis</p> <p>Pharmaceutical Biotechnology Drug Discovery and Clinical Application, 2004, Kayser and Mueller</p>
Supporting websites	<p>www.pubmed.org</p> <p>https://pixabay.com/videos/search/biotechnology/</p>

Teaching Environment	<input checked="" type="checkbox"/> Classroom <input type="checkbox"/> laboratory <input type="checkbox"/> Learning platform <input type="checkbox"/> Other
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Meetings and subjects timetable

Week	Topic	Learning Methods	Tasks	Learning Material
1 23-24/10/2022	Introduction I	Lecture/video		Text book
25-26/10/2022	Introduction II	Lecture	Video	Text book
2 30-31/10/2022	DNA Replication	Lecture/video discuss a protein structure	Relation between structure and function	Text book Selected teaching material
01-02/11/2022	DNA transcription	Lecture, discussion of disease and protein function	Quiz	Text book Selected teaching material
3 06-07/11/2022	RNA translation	Lecture	Mid exam	Text book
08-09/11/2022	RNA transcription	Lecture	Assignments (report, one page) Mid exam	Text book Selected teaching material
4 13-14/11/2022	Protein	Lecture/video	Mid exam	Text book
15-16/11/2022	Protein production	Lecture and video	Group discussion Mid- exam	Text book Selected website
5 20-21/11/2022	Proteomics	Lecture and video	Mid exam Discussion the toxins	Text book
22-23/11/2022	Proteomics	Lecture, problem solving based learning (poisoning)	Mid exam Treatment of poisoning indivual	Text book Selected website

6 27-28/11/2022	Formulation of biotech products	Lecture	Final exam	Text book
29-30/11/2022	Formulation of biotech products	Lecture and video discussion	Quiz Final exam	Text book Selected teaching material
7 04-05/12/2022	Interleukins	Lecture	Final exam	Text book
06-07/12/2022	Interferons	Lecture Video	Final exam	Text book Selected t
8 11-12/12/2022	Immunogenicity of biotech products	Lecture	Final exam Video discussion	Text book
13-14/12/2022	Immunogenicity of biotech products	Lecture, video discussion	Quiz Final exam	Text book, selected teaching material
9 18-19/12/2022	Pharmacokinetics and Pharmacodynamics of Peptide and Protein based Drugs	Lecture	Final Assignment	Text book Selected teaching material
20-21/12/2022	Pharmacokinetics and Pharmacodynamics of Peptide and Protein based Drugs	Lecture	Final exam Video	Text book Selected teaching material
10 25-26/12/2021	Monoclonal Antibodies and Therapy	Lecture	Final exam	Text book
27-28/12/2022	Eicosanoid metabolism	Lecture	Final exam	Selected websites Text book
11 02/1/2023	Immunization and Vaccines	Lecture	Final exam	All previous topics
03-04/1/2023	Immunization and Vaccines	Lecture	Final exam	Selected websites Text book
12 08-09/1/2023	Nucleic Acids and Gene Therapy	Lecture	Final exam	Selected websites Text book
10-11/1/2023	Nucleic Acids and Gene Therapy	Video/lecture discussion	Final exam	Text book, selected websites
13 15-16/1/2023	Medical Biotechnology	Lecture	Quiz, Final exam	Text book
17-18/1/2023	Medical Biotechnology	Lecture	Final exam	Selected websites Text book
14 22-23/1/2023	Pharmacogenetics	Lecture	Final exam	Text book Selected websites
24-25/1/2023	Pharmacogenetics	Lecture	Final exam	Text book Selected websites
15 29-30/1/2023	Microbial and Animal Biotechnology	Video	Final exam	Text book Selected websites

31-01/01-02/2022	Revision	Discussion	All the material	
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* includes: Lecture, flipped Class, project- based learning, problem solving based learning, collaborative learning

Course Contributing to Learner Skill Development

Using Technology
Use biotechnology data-bases and platforms effectively.
Communication skills
Self-confidence during discussion scientific problems
Application of concepts learnt
Intuitive life-long learning skills

Assessment Methods and Grade Distribution

Assessment Methods	Grade Weight	Assessment Time (Week No.)	Link to Course Outcomes
Mid Term Exam	% 30	8 th week	K1, K2,K3
Various Assessments *	% 30	Overall course duration	S1,S2, S3, C1,C2
Final Exam	% 40	16 th week	K1,K2,K3, K4, K5, S1, S2, S3, S4
Total	%100		

* includes: quiz, in class and out of class assignment, presentations , reports, videotaped assignment, group or individual projects.

Alignment of Course Outcomes with Learning and Assessment Methods

Number	Learning Outcomes	Learning Method*	Assessment Method**
Knowledge			
K1	Understand the principle of biotechnology, the meaning of protein based drugs	Lecture, and Videos	Exam and evaluation sheet
K2	Introduce the methods of protein production and purification, and formulation of biotechnology products	Lecture, discussion , video presentation	Exam Homework discussion
K3	Application of monoclonal antibodies, nucleic acid and stem cells in the therapy	Lecture, , video	Exam, discussion
K4	Understanding of the meaning of pharmacogenetics and gene therapy	Lecture, video	Exam,
K5	Knowing the ethics in the use of biotechnology	Lecture, video	Exam, discussion
Skills			
S1	Students will have a basic understanding of the biotechnological scientific method Students will	Lecture, , video	Exam and assignments

	have a basic understanding of the biotechnological scientific method	presentation collaborative learning	
S2	Students will have the opportunity to practice thinking critically and analytically and reason logically using current information and past experiences.	collaborative learning lecture	Homework, quiz
S3	Students will have practice in assessing basic sources of information and how to evaluate and use this information.	collaborative learning discussion lecture	Quiz
Competencies			
C1	Apply effective scientific communication and other skills to be able for working in scientific research field.	lecture	In class assignment Exam
C2	Participate in building of the problem solving skills	Lecture	Exam

* includes: Lecture, flipped Class, project- based learning , problem solving based learning, collaborative learning

** includes: quiz, in class and out of class assignment , presentations , reports, videotaped assignment, group or individual projects.

Course Polices

Policy	Policy Requirements
Passing Grade	The minimum passing grade for the course is (50%) and the minimum final mark recorded on transcript is (35%).
Missing Exams	<ul style="list-style-type: none"> • Missing an exam without a valid excuse will result in a zero grade to be assigned to the exam or assessment. • A Student who misses an exam or scheduled assessment, for a legitimate reason, must submit an official written excuse within a week from the an exam or assessment due date. • A student who has an excuse for missing a final exam should submit the excuse to the dean within three days of the missed exam date.
Attendance	The student is not allowed to be absent more than (15%) of the total hours prescribed for the course, which equates to six lectures days (M, W) and seven lectures (S,T,R). If the student misses more than (15%) of the total hours prescribed for the course without a satisfactory excuse accepted by the dean of the faculty, s/he will be prohibited from taking the final exam and the grade in that course is considered (zero), but if the absence is due to illness or a compulsive excuse accepted by the dean of the college, then withdrawal grade will be recorded.
Academic Honesty	Philadelphia University pays special attention to the issue of academic integrity, and the penalties stipulated in the university's instructions are applied to those who are proven to have committed an act that violates academic integrity, such as: cheating, plagiarism (academic theft), collusion, and violating intellectual property rights.

Program Learning Outcomes to be assessed in this Course

Number	Learning Outcome	Course Title	Assessment Method	Target Performance level
Kp6	To be familiar with protein based drugs and their usages.	Pharmaceutical Biotechnology	Objective and Exams	More than 70 % of students has more than 75 of 100

Description of Program Learning Outcome Assessment Method

Number	Detailed Description of Assessment
Kp6	Final exam, MCQ or assay questions

Assessment Rubric of the Program Learning Outcome

<p>10 MCQ will be given 1 point per question, or 4 assay question each 2.5 points General understanding the biotech-products 2.5 points Specific problems with producing of biotech products 2 points Application of biotech-products in treatment 2. points Quality control 2.5 points</p>
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