Philadelphia University
Faculty of Science
Department of –Biotechnology and Genetics Engineering
Second Semester, 2009/2010

Course Syllabus

Course Title: Pharmaceutical Biotechnology	**Course code:** 240441
Course Level: 4	**Course prerequisite (s) and/or corequisite (s):** 240343
Lecture Time: 8:15 -9:30	**Credit hours:** 3 hours

Academic Staff Specifics

Name	Rank	Office Number and Location	Office Hours	E-mail Address
Marwan Abu-Halaweh	**Assistant Prof.**	**Science building, 908**	**Sunday : 9:00- 10:00 Monday: 9:00- 10:00**	**mhalaweh@philadelphia.edu.jo**

Course module description:

I. This course is a core requirement for the department. It is based on lectures. This course contains three major parts:

   I. To understand the various techniques in biotechnology and their applications in the manufacturing of biopharmaceuticals and biomedical research
   II. To gain knowledge in some of the physicochemical properties, pharmacology and the formulation of commonly used biopharmaceuticals
   III. To understand the principles of the mechanism of some biotechnologically derived diagnostic aids/tests

Course module objectives:

At the end of this module, student will be able to:

I. By understanding of the composition and technology of biopharmaceutical drug production, and development and use of the gene therapy, students will expand

their practical knowledge and understanding of therapeutical effects as well as of undesired side effects of biopharmaceuticals.

II. Transferable/Key Skills and other attributes:

III. Appreciate and understand the legal steps involved in progressing a new drug to market.

IV. Demonstrate knowledge and understanding of currently topical and newly emerging aspects of pharmaceutical biotechnology

Course/ module components

- **Books (title , author (s), publisher, year of publication)**

  Pharmaceutical Biotechnology, second edition. Crommelin J.A., Sindelar R.D. Routledge-Taylor&Francis, London, New York, 2003

Teaching methods:

Lectures, discussion groups.

Learning outcomes:

- **Cognitive skills (thinking and analysis).**

1. Students will have a basic understanding of the scientific method.
2. Students will have the opportunity to practice thinking critically and analytically and reason logically using current information and past experiences.
3. Students will have practice in assessing basic sources of information and how to evaluate and use this information.

- **Communication skills (personal and academic).**

Students will gain experience in effective communication skills by practicing, listening, reading, writing and speaking clearly.
Short oral presentations of 5-8 minutes will be required of all students and will be given during a class period. Students will pick Pharmaceutical Biotechnology topic and discuss specific issues related to the topic.

Practical and subject specific skills (Transferable Skills).

1. Students will develop an awareness of the relationship between science and technology in terms of the life and Pharmaceutical Biotechnology.
2. Emphasis will be placed upon an analytical problem-solving approach to Pharmaceutical Biotechnology.

Assessment instruments

Allocation of Marks	
Assessment Instruments	**Mark**
First examination	**15**
Second examination	**15**
3 ten minuets exams	**15**
Reports and presentations	**5**
Final examination: 50 marks	**50**
Total	**100**

Course/module academic calendar

week	Basic and support material to be covered	Homework/reports and their due dates
(1)	Introduction	Assignment due date end of week 10
(2)	Molecular Biotechnology	
(3)	Biophysical and Biochemical Analysis of Biotech Products	
(4)	Production of Biotech Compounds and downstream processing	
(5)	Formulation of Biotech products	
(6) First examination	PK/PD of Nucleic Acids	Assignment due date
(7)	Monoclonal Antibody-Based Pharmaceuticals	Presentation
(8)	Vaccines (antibodies)	Presentation
(9)	Growth hormone, Interleukins, and Interferon's	Presentation
(10)	Pharmacogenetics	Presentation
(11) Second examination	Pharmacogenetics	
(12)	Economic consideration in Medical Biotechnology	
(13)	Patients, Companies & Pharmacy Issues	
(14)	Gene Therapy (oligonucleotides), Gene Therapy (ribozymes	
(15)	Gene Therapy (viral), Gene Therapy (non-viral)	
(16) Final Examination		

Expected workload:

On average students need to spend 2 hours of study and preparation for each 50-minute lecture/tutorial.

Attendance policy:

Absence from lectures and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college/faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

Module references

Books

Students will be expected to give the same attention to these references as given to the Module textbook(s)

Pharmaceutical Microbiology, Hugo Russell, , Sixth edition, Blackwell Science, (2005)

Journals

- Any biotechnology, pharmaceutical microbiology and pharmaceutical biotechnology journal will be of great benefits to the student for their assignment.