



Philadelphia University
Faculty of -Science
Department of –Biotechnology and Genetics engineering
-Second semester, 2009/2010

Course Syllabus

Course Title: Animal Biotechnology	Course code: 240471
Course Level: 4	Course prerequisite (s) and/or corequisite (s): 240386
Lecture Time: 10:00 – 11:00	Credit hours: 3 hours

		<u>Academic</u>		
		<u>Staff</u>		
		<u>Specifics</u>		
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:

This module describes the diverse problems of the environment and the approaches toward their solution or mitigation in connection to the modern or classical methods of biotechnology. It describes the significance in conservation of environmental resources and biodiversity, provision for alternate sources of energy, biological control of pests and pathogens, purification of environment, mitigation of problems of chemical fertilizers , and most important of all, improvement in the quality of life.

Course module objectives:

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

- (1) Develop an understanding to genes and genome .
- (2) Develop an understanding of current techniques used in biotechnology and their applications to animal agriculture and the biomedical field.
- (3) Develop an understanding to the vaccine development.
- (4) Develop an understanding to the gene therapy.
- (5) Understand and discuss the social and ethical issues associated with biotechnology.

Course/ module components

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

1- Title: Gene Transfer to Animal Cells

Author(s) R.M.Twyman

Publisher : Garland Science/BIOS Scientific Publishers, 2005

ISBN 0-203-48923-3

2- Title: *Animal Transgenesis and Cloning.*

Author(s) Louis-Marie Houdebine

Publisher : John Wiley & Sons, 2003

ISBN: 0-470-84827-8

3- Title: Animal Biotechnology 2nd edition.

Author(s)/Editor(s): M. M. Ranga

Publisher: Agrobios India

ISBN: **81-7754-155-2**

Teaching methods:

Lectures, groups discussion.

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 Animal 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 Animal Biotechnology.
2. Emphasis will be placed upon an analytical problem-solving approach to animal Biotechnology.

Assessment instruments

<u>Allocation of Marks</u>	
Assessment Instruments	Mark
First examination	15
Second examination	15
Ten minuets Exams * 3	15
Reports and presentations	5
Final examination: 50 marks	50
Total	100

Course/module academic calendar

Week	Subject
(1)	Introduction and history
(2)	Preservation and maintenance of animal cell lines, cryo preservation and transport of animal germ plasma (i.e. semen, ovum and embryos).
(3)	Gene and Genome , Gene expression and regulation
(4)	Gene Transfer to Animal Cell
(5)	Gene Transfer to Animal Cell
(6)	Gene Transfer to Animal Cell
(7)	Animal Germ cells and development
(8)	Animal Germ cells and development
(9)	Animal Germ cells and development
(10)	Valuable genes for animal biology .
(11)	Transgenic animals and gene knock-outs.
(12)	Transgenic animals in agriculture and nutritional science
(13)	DNA vaccine
(14)	DNA Vaccine, Antibiotics as growth promotants
(15)	Genomics and proteomics
(16)	Molecular biological techniques for rapid diagnosis of genetic diseases and gene therapy.

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)

1. Alberta B, Johnson A, Lewis J, Raff M, Roberts K, Walter P. 2002. Molecular biology of the Cell, 4th ed., Garland Publishing, New York.

Journals

- Any animal biotechnology journal will be of great benefits to the student for their assignment.

Website(s):

Students will be expected to visit the following internet sites.

1. <http://www.animalbiotechnology.org/>
2. <http://www.ext.vt.edu/pubs/biotech/443-003/443-003.html>