Philadelphia University
Faculty of Science
Department of Biotechnology and Genetic Engineering
1st semester, 2014/2015
Course Syllabus

Course Title: Animal Tissue Culture Lab	**Course code: 240472**
Course Level: 4th year	**Course prerequisite (s) and/or co requisite (s): 240471**
Lecture Time: Monday: 13.10-16 pm (sec.1)	**Credit hours: 1**

Academic Staff Specifics

Name	Rank	Office Number & Location	Office Hours	E-mail Address
Dr. Raida Khalil	**Associate Professor**	**914**	**M&W 10-13pm**	**R_khalil@philadelphia.edu.jo**

Course module description:
This module is a basic requirement for the department. It provides insights into the practical aspects of cell culture. The lab should provide sufficient information to perform the basic techniques. It is intended as an introduction to the theory of techniques and the biology of cultured cells

Course module objectives:

- Describe the basic techniques used in tissue culture.
- Describe the major Equipment's used in tissue culture.
- Understand the safety procedures need for tissue culture.
- Be familiar with techniques of single cell, organ culture, Primary culture and Cell line
- Expose to the Basic stem cell experiments

Course/ module components

1-Title: "Culture of Animal Cells: A manual of basic technique", 6th Edition(2010) Author(s)/Editor(s): Freshney RI.
Publisher: WIELY-LISS

ISBN: **978-0-470-52812-9**

2-Animal Tissue culture laboratory manual prepared by Dr. Khaled Al Qaoud, Dr.Raida khalil&Mrs Sabah Saad and other supplement sources

Teaching methods:

The course involves theoretical description of methodology, discussion about practical work and experiment execution. Students should work in groups, follow up their experiments, write reports about results and discuss all related matters with supervisor.

Learning outcomes:

- **Knowledge and understanding**

The students should be able to know how to generate a suitable sterile environment for a successful cell culture.
They should be able to differentiate between different types of cells and tissue sources.

Cognitive skills (thinking and analysis).

The students will learn the ability to correlate between different biological samples and show the importance of different media in tissue culture

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

- **Practical and subject specific skills (Transferable Skills).**
  - The ability to handle different sources of tissue culture.
  - Using of tissue culture techniques in pharmaceutical studies and toxicity analysis.
  - Benefit of such skills and practices in higher studies.

Assessment instruments: Short reports, Quizzes. Problem solving and trouble shooting, Middle and Final exams

Allocation of Marks	
Assessment Instruments	**Mark**
Midterm examination	**30 %**
Final examination:	**40%**
Reports, Quizzes, Home works& Open lab reports	**30 %**
Total	**100%**

Documentation and academic honesty

Documentation style (with illustrative examples), Protection by copyright, Avoiding plagiarism.

Course/module academic calendar

week	Basic and support material to be covered	Homework/reports and their due dates
(1)	Introduction to Cell culture Lab design, Equipment, Safety in the Lab, and Aseptic Conditions	**Homework will be assigned during the course and have one week a maximum due date**
(2)	Cells Counting and Cell Viability Assessment	
(3)	Dissecting Mouse and Primary Culture of Splenocytes	

(4)	Organ Disaggregation Techniques
(5)	Culture of Bone Marrow Cells and stem cells
(6)	Stem cells(Bone marrow source) differentiation into adipose and Osteoblast cells.
(7)	**Midterm**
(8)	Cell line culture(e.g MCF-7)
(9)	Feeding , trypsinization and other follow up cell line culture steps
(10)	Mini-project(working group:
(11)	MTT Assay and IC50
(12)	Cell Freezing (Cryopreservation) General discussion
(13)	**Final**

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

Title: "Cell culture Tissue culture", 3rd (2000)
Author(s)/Editor(s): Masters,John R. (ed.)
Publisher: Oxford press
ISBN: 0-19-963796-2

Recommended Websites

http://www.molecular-plant-biotechnology.info/animal-tissue-culture-and-hybridoma-technology/

http://www.biotechumea.org/

http://www.getter.co.il/biomed/biomed-lab/

http://www.protocol-online.org/prot/Cell_Biology/Cell_Culture/index.html

http://faculty.yu.edu.jo/akhaled/