



**Philadelphia University**  
**Faculty of Science**  
**Department of Biotechnology**  
**First semester, 2007/2008**

**Course Syllabus**

Course Title: <b>Plant tissue culture</b>	Course code: <b>240323 &amp; 240384</b>
Course Level: <b>3<sup>rd</sup> year</b>	Course prerequisite (s) and/or corequisite (s): <b>240322 &amp; 240383</b>
Lecture Time: <b>Tuesday &amp; Thursday 13- 16</b>	Credit hours: <b>one credit hour</b>

**Academic Staff Specifics**

<b>Name</b>	<b>Rank</b>	<b>Office Number</b>	<b>Office Hours</b>	<b>E-mail Address</b>
Dr. Lolita Qouta	Assistant professor	816	10-11 Sun., Tue. &Thur.	<a href="mailto:lqouta@philadelphia.edu.jo">lqouta@philadelphia.edu.jo</a>

**Course module description:**

This laboratory course in the first few weeks, aims to introduce the students to the principles and applications of plant tissue culture as well as the biology of cultured plant cells. Later through the course, Students will be exposed to some molecular techniques using plant systems. The designed experiments will illustrate the principles and ideas discussed in the plant biotechnology module. Students are encouraged to enroll in this practical and affiliated theoretical course 240322 & 240383 in the same semester. Lab sheets will be mailed or handed to the students a week before the scheduled lab. The students are expected to read and comprehend these sheets pre the lab session. A quiz will be given at the beginning of every lab session. The students are supposed to write reports discussing the obtained results and following a format explained by the instructor Miss Lana Al Qadoumi

## Course module objectives:

Upon the completion of this course, students are expected to

- Be able to work under aseptic conditions to cultivate different plant species and/or parts *in vitro*.
- Practice scientific thinking to analyze the experiments, keep records, and present results.
- Be able to use the current techniques in plant molecular biology, including RNA and DNA extraction, design of primers, electrophoresis and expression analysis.
- Be familiarized to the use of the plant websites like the Tair [www.arabidopsis.org](http://www.arabidopsis.org) and [www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov)

## Course academic calendar

Lab	Title of the experiment
(1)	Introduction Media preparation, contamination tests, and sterilization
(2)	Germinating seeds under aseptic conditions
(3)	Callus cultures using different explants, initiation and subculturing
(4)	Suspension cultures, initiation and monitoring growth of cultures
(5)	Protoplast culture
(6)	Design of primers, check on cultures, subculture if necessary  *****Mid term exam
(7)	Extraction of RNA from Arabidopsis suspension cells, check on cultures, subculture if necessary
(8)	Synthesis of cDNA, check on cultures, subculture if necessary
(9)	Amplification of cDNA with the primers, check on cultures, subculture if necessary
(10)	Histology of Arabidopsis suspension cells, check on cultures, subculture if necessary
(11)	Extraction of pectin from Arabidopsis suspension cells, check on cultures, subculture if necessary
(12)	Immuno-blotting of extracted pectin, check on cultures, subculture if necessary
(13)	Final exam

Please note that there could be changes in the labs according to the availabilities of plants and chemicals. Always check with your instructor a week in advance.

### **Course/ module references**

- Title: **Introduction to plant tissue culture**  
Author: **Razdan, M.K.**  
Publisher: **Science publisher. USA. 2003.**  
ISBN: **1-578008-237-4**  
Library call number: **571.5382**
- Title: **Biotechnology of plant tissues**  
Authors: **Yadav, P/R. and Tyagi, r.**  
Publisher: **Discovery publishing house. India. 2006**  
ISBN: **81-8356-073-3**  
Library call number: **631.5233 YAD**
- Title: **Plant cell and tissue culture**  
Author: **Narayanaswamy, S.**  
Publisher: **McGraw-Hill publishing company. 1994**  
ISBN: **0-07-460277-2**  
Library call number: **571.5382**

### **Assessment instruments**

<b>Assessment Instruments</b>	<b>Mark</b>
Mid term exam	<b>20</b>
Reports	<b>20</b>
Lab work	<b>10</b>
Quizzes	<b>10</b>
Final	<b>40</b>
Total	<b>100</b>

### **Attendance policy:**

**Absence from lectures and/or tutorials shall not exceed 15% (2 lab sessions). 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.**