



Course Specifications

Course Title:	Plant Tissue Culture
Course Code:	2014213-3
Program:	Bachelor in General Biology
Department:	Biology Department
College:	College of Sciences
Institution:	Taif University

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A. Course Identification

1. Credit hours:	3 hr
2. Course type	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:	12 th level – 4 th year
4. Pre-requisites for this course (if any):	Molecular Biology 2014104-3
5. Co-requisites for this course (if any):	None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	6 hr/Week	100 %
2	Blended	-	-
3	E-learning	-	-
4	Distance learning	-	-
5	Other	-	-

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	20
3	Tutorial	-
4	Others (specify)	-
	Total	50

B. Course Objectives and Learning Outcomes

1. Course Description: The course includes introduction, terminology, stages of plant tissue culture, factors affecting plant tissue culture, role of hormones in tissue culture, the general application of plant tissue culture, tissue culture for vegetable crops, fruit crops and in vitro improvement in plant tissue culture through protoplast fusion.
2. Course Main Objective: The main objectives are to identify the importance of plant tissue culture media kinds, recognize the stages of plant tissue culture, general application of plant tissue culture and practice tissue culture of different crops as well as define the isolation of protoplast and protoplast culture. It also aims to describe some examples for using plant tissue culture in mass production of some selected horticulture plants.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding:	

CLOs		Aligned PLOs
1.1	Identify general facts, principles, scientific terminology and concepts across tissue culture.	K1
1.2	Recognize the principle and practices of tools and equipment used in plant tissue culture.	K3
2	Skills:	
2.1	Apply principles and concepts of plant tissue culture using academic knowledge and practical skills.	S1
3	Values:	
3.1	Develop plans to perform specific tasks with autonomy and responsibility.	V1
3.2	Demonstrate positive behaviors and awareness to report and deliver presentations.	V3

C. Course Content

No	List of Topics	Contact Hours
1	Introduction (the history of plant tissue culture) Principles and botanical basis of plant tissue culture	3L+2P
2	Advantages and disadvantages of plant tissue culture	3L+2P
3	Laboratory establishment including design, basic requirements and equipment's	3L+2P
4	Media preparation and component of different formulas	3L+2P
5	Micro propagation techniques	3L+2P
6	Stages of micro propagation and the requirements for each.	3L+2P
7	Micro propagation of selected species of horticulture plants	3L+2P
8	Protoplast isolation	3L+2P
9	Protoplast culture	3L+2P
10	Using tissue culture in plant improvement	3L+2P
Total		30L+20P

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding:		
1.1	Identify general facts, principles, scientific terminology and concepts across tissue culture.	Lectures Brain storming	Paper-based exams
1.2	Recognize the principle and practices of tools and equipment used in plant tissue culture.	Lectures Cooperative learning	Practical reports Practical exam
2.0	Skills:		
2.1	Apply principles and concepts of plant tissue culture using academic knowledge and practical skills.	Lectures Small group activities	Paper-based exams Practical reports
3.0	Values:		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.1	Develop plans to perform specific tasks with autonomy and responsibility.	Small group activities Open discussion	Practical reports Activities evaluation
3.2	Demonstrate positive behaviors and awareness to report and deliver presentations.	Small group activities Cooperative learning	Activities evaluation

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam	5 th	20%
2	Semester Activities	Periodic	10%
3	Practical Reports	Weekly	20%
4	Final Practical Exam	11 th	10%
5	Final Exam	12 th	40%
Total			100%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

6 hours per week (as defined in the teaching schedule of the faculty member) for academic advice and consultations.

Teaching staff is also available using Blackboard web site and Taif University “Edugate” System.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	- Bhojwani, S.S., Dantu P.K. (2013). Plant Tissue Culture: An Introductory Text. Springer Heidelberg New York, USA, ISBN: 978-81-322-1026-9. - عبدالمحسن، ماجد (١٩٩٨). تقنيات زراعة الأنسجة النباتية. وكالة الاهرام للتوزيع، القاهرة، جمهورية مصر العربية.
Essential References Materials	- المعري، خليل (١٩٩٥). إكثار النخيل: زراعة الأنسجة النباتية، دار الفجر للنشر والتوزيع، القاهرة، جمهورية مصر العربية. - البرغوثي، إيهاب (١٩٩٧). زراعة الأنسجة النباتية من المنظور الفسيولوجي، دار الفكر للنشر والتوزيع، القاهرة، جمهورية مصر العربية.
Electronic Materials	Blackboard website Website of Saudi digital Library
Other Learning Materials	Digital programs and professional software.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- Classrooms for 40 students\lecture. - Laboratory for 20 students\ lab activity
Technology Resources (AV, data show, Smart Board, software, etc.)	- Data show projector
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	- Video films of all procedures of plant tissue culture including the laboratory section, media preparation, the tissue culture techniques, sterilization, etc

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Indirect
Quality of learning resources	Peer Reviewer Students	Direct Indirect
Extent of achieving the course learning outcomes	Peer Reviewer Students	Direct Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Biology Department
Reference No.	Committee number 14 - Academic Year 1442-1443H
Date	22\5\2022G – 21\10\1443H

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