



Course Specifications

Course Title:	Plant Physiology I
Course Code:	23073351-3
Program:	BSc Biology.
Department:	Biology
College:	Aljumum University College
Institution:	Umm Al-Qura university

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A. Course Identification

1. Credit hours: 3 hours
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: Level 5/ 3rd year.
4. Pre-requisites for this course (if any): Biochemistry (23052231-3).
5. Co-requisites for this course (if any):

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom		70 %
2	Blended		
3	E-learning		10 %
4	Correspondence		10 %
5	Other		10 %

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	28
2	Laboratory/Studio	42
3	Tutorial	6
4	Practical/Field work/Internship	6
5	Others (specify)	10
	Total	92
Other Learning Hours*		
1	Study	
2	Assignments	
3	Library	
4	Projects/Research Essays/Theses	
5	Others (specify)	
	Total	

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

The course will cover a comprehensive knowledge of plant organ functions including

plant cell water relations, uptake of water and minerals, translocation of solutes, definition and importance of enzymes, photosynthesis, and respiration as well as plant growth and hormones, and plant tissue culture. The course aims to give students a detailed and comprehensive idea of the basics of the various processes within the plant in terms of water relations. Furthermore, it aims to give a brief picture of enzymes, photosynthesis, and respiration as well as plant growth and hormones, and plant tissue culture.

2. Course Main Objective

Intended Learning Outcome:

After completing this course student should be able to:

- Define the major concepts of Plant Physiology.
- Identify how plant structure relates to function.
- Describe fundamental functions of plants at all levels; cells, tissues, organs and whole plant system.
- Acquire the essential practical skills relevant to the use of instruments in chemical analysis.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Upon successful completion of this course the student will be able to: <ul style="list-style-type: none"> • Recognize the concept and importance of water relations and the related processes as well as enzymes, photosynthesis, respiration, plant growth and hormones, and plant tissue culture. • Describe the relation between water potential, solute potential and turgor pressure. • List and describe the three pathways of water absorption, sap ascent and transpiration. • Describe the types and stages of plant growth as well as the tissue culture techniques. • List the factors affecting water absorption and transpiration. • List and describe the importance of minerals and mineral deficiency symptoms. 	
1.2		
1.3		
1...		
2	Skills :	
2.1	Cognitive Skills: <ul style="list-style-type: none"> - Having successfully completed the course students should be able to: - Compare between solutions, between the three pathways of water movement, macro- and micronutrients, and photosynthesis and respiration. - Differentiate between types of growth and growth stages as well as classes and types of growth regulators. - Acquire the essential practical skills relevant to the use of instruments in chemical analysis. . - Analyse physiological experimental data and draw sensible conclusions 	
2.2		
Interpersonal Skills and Responsibility		

CLOs		Aligned PLOs
2.3	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> - Work independently and as part of a team.. - Report writing. - Use of web internet. - Use of power point and laptop. - Use of projector systems. - Use of the advanced features in scientific calculators. <p>Communication, Information Technology and Numerical Skill</p>	
2.4	<p>The student is able to propose solutions to some problems:</p> <ul style="list-style-type: none"> - Skills, oral and written communication - Using computer and search the Web for information sources - Use a power point for Proposals Group - The use of statistical methods in the analysis of information - To use computer and internet. <p>Psychomotor Skills (if applicable)</p> <ul style="list-style-type: none"> - Description of the psychomotor skills to be developed and the level of performance required - Collecting samples from environment - Examining samples in lab 	
3	Competence:	
3.1	- Developing oral presentations.	
3.2	- Communicating personal ideas and thoughts.	
3.3	- Work independently and as part of a team to finish some assignments.	
3...	- Communicate results of work to others	

C. Course Content

#	List of Topics	No. of Weeks	Contact Hours
1	Physiological Aspects of the Plant Cell	1	2
2	Protoplasm	2	2
3	Colloidal Properties of Protoplasm	3	2
4	Plasma Membrane and Permeability	4	2
5	Water Relation of Cells	5	2
6	Plant Water Relations	6	2
7	Absorption and Ascent of Sap	7	2
8	Transpiration	8-9	4
9	Mineral Nutrition	10	2
10	(Importance of Essential Nutrient)	11	2
11	Key to mineral deficiency symptoms	12	2
12	(Enzymes)	13	2
13	Respiration and Energy Transform	14	2
	Photosynthesis		
	Growth, Development and Differentiation and Plant Hormones.		
	Plant Tissue Culture		

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		
1.1	<p>Upon successful completion of this course the student will be able to:</p> <ul style="list-style-type: none"> - Recognize the concept and importance of water relations and the related processes as well as enzymes, photosynthesis, respiration, plant growth and hormones, and plant tissue culture. - Describe the relation between water potential, solute potential and turgor pressure. - List and describe the three pathways of water absorption, sap ascent and transpiration. - Describe the types and stages of plant growth as well as the tissue culture techniques. - List the factors affecting water absorption and transpiration. - List and describe the importance of minerals and mineral deficiency symptoms. - 	<p>Lectures and student research In-class lecturing where the previous knowledge is linked to the current and future topics. Homework assignments. Discussions (connecting what they learn in the class and applying this information in laboratory). Handout of lecture notes for each topic</p>	<p>Homework, exams and research papers</p>
1.2			
...			
...			
2.0	Skills		
2.1	Developing oral presentations	<p>Application of essential scientific techniques through lectures, classes and essays.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Small group discussion. <input type="checkbox"/> Ask the students to make small search project during the semester. <input type="checkbox"/> Making connections between different topics across the course. 	<p>Course work reports. Evaluation of the topics prepared by students according to the content, arrangement, and covering of the topic. Midterm and final exams. Checking the homework assignments</p>
2.2	Communicating personal ideas and thoughts.		
...	Work independently and as part of a team to finish some assignments.		
3.0	Competence		
3.1	Use information and communication technology	<p>Oral presentations.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Internet search assignments and essays. <input type="checkbox"/> Incorporating the use and utilization of computer in the course requirements. <input type="checkbox"/> Students will be asked for delivering a 	<p>Evaluation of student essays and assignments.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Evaluating the laboratory written reports. <input type="checkbox"/> Marks given to for good reports and presentations
3.2	Use IT and communication technology in gathering and interpreting information and ideas		
...	Use the internet as a means of communication and a source of information.		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		summary regarding certain topics related to the course.	□ Evaluating during the discussion in lecture and reports. Part of the grad is put for student's written participation

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Home works, search or presentation	4th and 8th weeks	10 %
2	Midterm "Written Test (1)"	8th week	30%
3	Final Exam "Practical Test"	15th week	20%
4	Final Exam Written Test		40%
5			
6			
7			
8			

*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 :

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<p>- فسيولوجيا النبات العام – الجز الثاني – باصلاح، محمد عمر، علي الهلال، محمد حمد الوهبيي – مطبعة جامعة الملك سعود للنشر العلمي والمطابع – الرياض (٢٠٠٢م)</p> <p>- علم النبات العام – د أحمد محمد مجاهد – ١٩٨٦م- مكتبة الأنجلو المصرية</p> <p>- أساسيات فسيولوجيا النيات – دكتور /محمد جمال الدين حسونة – دار المطبوعات الجديدة القاهرة – ج.م.ع.</p> <p>- أسس الكيمياء الحيوية</p> <p>- عماد فسيولوجيا النيات – دكتور/ عماد الدين وصفي - المكتبة الأكاديمية – الدقي – القاهرة – ج.م.ع.</p> <p>- فسيولوجيا النيات – دكتور/ أحمد مصطفى حمد – نيوأوفست للطباعة – ت ٠٠٢٠٢٥٧٣٠٥٢٦ - القاهرة – ج.م.ع.</p> <p>- كتاب مترجم عن فسيولوجيا النبات للأستاذ الدكتور / روبرت دفلن – القاهرة - ج.م.ع</p> <p>- أسس الكيمياء الحيوية – للدكتور محمد عبد المنعم الأعسر – المكتبة الأكاديمية - القاهرة ج.م.ع</p> <p>Growth and Organization in Plant , Stewart, F.C. Adison - Wesley - Co. Reading Wareing (1987)</p>
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	<p>- فسيولوجيا النبات العملية – عبد الجواد – هشام, محمد علي الوهبيي - الناشر – عمادة شؤون المكتبات , جامعة الملك سعود - الرياض (١٤٠٩ هـ) - الكيمياء الحيوية (كيمياء حيوية تركيبية وكيمياء حيوية فسيولوجية – عبد الرحمن أحمد الحملاوي) الطبعة الثالثة – دار القلم – الكويت – ١٩٨٤ م</p>
<p>Essential References Materials</p>	<p>- Dr. Imad Physiology / Imad Eddin descriptive – Dokki. Cairo – Egypt. - The vital foundations of Chemistry - Dr. Mohamed Abdel Moneim southpaw-academic library - Cairo - ARE - Growth and Organization in Plant, Stewart, FC Adison - Wesley Co. Reading Wareing (1987) - Plant Physiology process - Abdel Gawad - Hisham, Mohammed Ali Al Wahaibi - publisher - Deanship of Library Affairs, King Saud University - Riyadh (1409) - General Plant Physiology - Part II - reform, Mohammad Omar, Ali Crescent, Mohammed Hamad Al Wahaibi - King Saud University Press for publishing scientific and presses - Riyadh (2002 m) - General Plant - Science Dr. Ahmed Mohammed Mujahid --1 986 m-Anglo-Egyptian library - The basics of the physiology of intentions - Dr. / Mohammed Jamal al-Din Hassouna - House new publications Cairo - J.m.a. - Chemistry vital (vital chemistry and synthetic chemistry vital physiological - Ahmed Abdel-Rahman el-Hamalawy) Third Edition - Pen House - Kuwait - 1984 - Plant Physiology year - the second part - the reform of Mohammad Omar - the Hilali - Mohammed Hamad Al Wahaibi - King Saud University Press for publishing scientific and presses - 2002</p>
<p>Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)</p>	<p>- Dr. Imad Physiology / Imad Eddin descriptive – Dokki. Cairo – Egypt. - The vital foundations of Chemistry - Dr. Mohamed Abdel Moneim southpaw-academic library - Cairo - ARE - Growth and Organization in Plant, Stewart, FC Adison - Wesley Co. Reading Wareing (1987) - Plant Physiology process - Abdel Gawad - Hisham, Mohammed Ali Al Wahaibi - publisher - Deanship of Library Affairs, King Saud University - Riyadh (1409) - General Plant Physiology - Part II - reform, Mohammad Omar, Ali Crescent, Mohammed Hamad Al Wahaibi - King Saud University Press for publishing scientific and presses - Riyadh (2002 m) - General Plant - Science Dr. Ahmed Mohammed Mujahid --1 986 m-Anglo-Egyptian library - The basics of the physiology of intentions - Dr. / Mohammed Jamal al-Din Hassouna - House new publications Cairo - J.m.a. - Chemistry vital (vital chemistry and synthetic chemistry vital physiological - Ahmed Abdel-Rahman el-Hamalawy) Third Edition - Pen House - Kuwait - 1984 - Plant Physiology year - the second part - the reform of Mohammad Omar - the Hilali - Mohammed Hamad Al Wahaibi - King Saud University Press for publishing scientific and presses - 2002</p>

Electronic Materials	There are too many websites and are searched using the more than one method to enter on Google for sites that have to do with rule the required of scientific study. www.ucalgary.ca/plantmetabolism. www.ecomii.com/.../plant-metabolism. www.ufv.br/dbv/pgfvg/.../metabolism/NMR.pdf.
Other Learning Materials	Using the Microsoft software in writing tables and graphs and PowerPoint presentation using the Power Point.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms, laboratories
Technology Resources (AV, data show, Smart Board, software, etc.)	data show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods

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	
Reference No.	
Date	

Head of Department


Dr. Wessam M. Filfilan

Stamp

