


COURSE GUIDE: 2016-17

COURSE DETAILS			
Name :	DIAGNOSIS OF NUTRIENTS IN CROPS		
Code :	70784241	Plan :	Master in Mediterranean Greenhouse Horticulture
Academic year :	201617	Level :	
Course :	1	Type :	
Semester :	2		
TIME DISTRIBUTION IN ACCORDANCE WITH REGULATION			
ECTS :	3	In-class hours:	22,5
		Not in-class hours:	52,5
		Total time (in hours):	75,0
USE OF VIRTUAL PLATFORM:			

LECTURER DETAILS			
Name	Salas Sanjuán, María del Carmen		
Department	Dpto. de Agronomía		
Building	Escuela Politécnica Superior		
Office	2.45		
Phone	950015951	E-mail	csalas@ual.es
Personal webpage			
Name	Sánchez Prados, Agustín		
Department	Dpto. de Agronomía		
Building	CITE IIB		
Office	2.20		
Phone	950015925	E-mail	agsanche@ual.es
Personal webpage			

ACTIVITIES ORGANIZATION	
<i>Planned activities for learning and workload distribution per activity (in hours)</i>	
I. STUDENT'S ACTIVITIES (In-class / Online)	<ul style="list-style-type: none"> Seminars [Example] 0,0 Teaching group [Example] 10,5 Work group / small group [Example] 12,0
	<i>Total In-class/Online time :</i> 22,5

Puede verificar la autenticidad, validez e integridad de este documento en la dirección:
<https://verificarfirma.ual.es/verificarfirma/code/w+Y+bspYMUgmsRqtKya6w==>


Firmado Por	Universidad De Almería	Fecha	19/01/2017
ID. FIRMA	blade39adm.ual.es	PÁGINA	1/5
			
w+Y+bspYMUgmsRqtKya6w==			

II. STUDENT'S AUTONOMOUS ACTIVITIES (not in-class)	•	52,5
	<i>Total not in-class time :</i>	52,5
TOTAL WORKING HOURS		75,0

ELEMENTS OF INTEREST FOR COURSE LEARNING	
Justification of contents	
Nutrient management is using crop nutrients as efficiently as possible to improve productivity while protecting the environment. The need for appropriately qualified and proactive advisers to support the sustainable production horticultural crops is essential. Detailed planning of plant and crop nutrition is required to reduce the environmental impact on soil, water and air. The use of soil, substrates, nutrient solution and plant sampling techniques for nutrient management in relation to understand nutrient status and demand.	
Other courses related	
Basic concepts of chemistry.	
Specific aspects of vegetable production systems.	
Minimum knowledge required to deal with the Course	
No prerequisites are required.	

COMPETENCIES	
General competencies	
<i>General objectives of the University of Almería</i>	
Basic knowledge of the profession	
Ability to solve problems	
<i>Other general objectives</i>	
Understand and possess knowledge	
Ability to make judgments	
Specific competencies developed	
LEARNING OBJECTIVES/OUTCOMES	
Nutrient Diagnosis tools management in Mediterranean greenhouse horticultural systems.	
Improving nutrient management to optimize hydric and mineral nutrition.	

Puede verificar la autenticidad, validez e integridad de este documento en la dirección:
<https://verificarfirma.ual.es/verificarfirma/code/w+Y+bspYMUgmmmsRqtKya6w==>

Firmado Por	Universidad De Almeria	Fecha	19/01/2017
ID. FIRMA	blade39adm.ual.es	PÁGINA	2/5
			
w+Y+bspYMUgmmmsRqtKya6w==			

CONTENTS			
Module	1. Nutrient requirements of greenhouse grown crops		
Content	Nutrient requirements of greenhouse grown crops. Absorption of nutrients by crops.		
Learning system and methodology			
<i>System</i>	<i>Learning procedures and activities</i>	<i>Observations</i>	<i>Hours In-class/ Online</i>
Teaching group [example]	Seminars [example]		2,0
Work group [example]	Practical case [example]		0,0
Seminars [example]	Lecture, debate [example]		0,0
Description of autonomous workload			
Module	Strategies of crop nutrition management.		
Content			
Learning system and methodology			
<i>System</i>	<i>Learning procedures and activities</i>	<i>Observations</i>	<i>Hours In-class/ Online</i>
Teaching group [example]	Seminars [example]		2,0
			0,0
			0,0
Description of autonomous workload			
Module	Factors affecting plant nutrition. Salinity		
Content			
Learning system and methodology			
<i>System</i>	<i>Learning procedures and activities</i>	<i>Observations</i>	<i>Hours In-class/ Online</i>
Teaching group [example]	Seminars [example]		2,5
			0,0
			0,0
Description of autonomous workload			
Module	2. Determination of the nutritional status of the crops.		
Content	Tools available for determining nutritional status of crops. Sampling, analysis and recommendations.		

Puede verificar la autenticidad, validez e integridad de este documento en la dirección:
<https://verificarfirma.ual.es/verificarfirma/code/w+Y+bspYMUgmmmsRqtKya6w==>

Firmado Por	Universidad De Almeria	Fecha	19/01/2017
ID. FIRMA	blade39adm.ual.es	PÁGINA	3/5
			
w+Y+bspYMUgmmmsRqtKya6w==			

Learning system and methodology			
<i>System</i>	<i>Learning procedures and activities</i>	<i>Observations</i>	<i>Hours In-class/ Online</i>
Teaching group [example]	Seminars [example]		2,0
Work group [example]	Practical case [example]		2,0
Seminars [example]	Lecture, debate [example]		0,0
Description of autonomous workload			
Module	Nutritional diagnosis systems.		
Content			
Learning system and methodology			
<i>System</i>	<i>Learning procedures and activities</i>	<i>Observations</i>	<i>Hours In-class/ Online</i>
Teaching group [example]	Seminars [example]		2,0
Work group [example]	Practical case [example]		2,0
	Lecture, debate [example]		4,0
	Seminars [example]		2,0
	Practical work		2,0
Description of autonomous workload			

EVALUATION SYSTEM			
Assessment criteria			
Participation and attendance: 15%			
Exercises and activities requested (30%)			
Examinations (Resolution of activities) (55%)			
Marking system			
	<i>Activity</i>	<i>(Number of hours)</i>	<i>Percentage</i>
I. STUDENT 'S ACTIVITIES (In-class/Online)	• Seminars [example]		%
	• Teaching group [example]	10,5	35%
	• Work group/ small group [example]	12,0	35%
II. STUDENT'S AUTONOMOUS	• Individual work [example]	52,5	30%

Puede verificar la autenticidad, validez e integridad de este documento en la dirección:
<https://verificarfirma.ual.es/verificarfirma/code/w+Y+bspYMUgmmsRqtKya6w==>

Firmado Por

Universidad De Almeria

Fecha

19/01/2017

ID. FIRMA

blade39adm.ual.es

w+Y+bspYMUgmmsRqtKya6w==

PÁGINA

4/5



w+Y+bspYMUgmmsRqtKya6w==

ACTIVITIES (Autonomous work)
Assessment instruments
Tests, exercises, problems.
Observations of the process.
Final evaluation of reports, works, projects, etc.
Monitoring mechanisms
Participation in communication tools (discussion forums, emails)
Delivery of activities in class
Delivery of activities in virtual classroom

BIBLIOGRAPHY
Recommended bibliography
Fertigation (Burt, C., O Connor, K., Ruehr, T.)
Soil fertility and fertilizers : an introduction to nutrient management (John L. Havlin)
Mineral Nutrition and Plant Disease. (Datnoff, L., Elmer, W., Huber, D)
Crecimiento y concentración de iones en los tejidos de menta y salvia regadas con aguas salinas para su uso en jardinería (Escalona, A., Salas, M.C., Coutinho, C., Guzmán, M)
Determining Nutrient Diagnostic Norms for Greenhouse Roses. (Franco, J.J., Henao, M., Guzmán, M., Cabrera, R.)
How does salinity affect mineral ion relations and growth of Lobelia erinus for use in urban landscaping? (Escalona, A., Salas, M.C., Coutinho, C., Guzmán, M.)
USING SUCTION CUP TO IMPROVE THE MONITORING OF SOIL SOLUTION IN A GREENHOUSE FERTIGATED CROP (Salas, M.C.,)
Bibliography existing in the library of the University of Almeria
http://almirez.ual.es/search/x?SEARCH=70534211
WEB ADRESSES