COURSE SYLLABUS 2022-23

BASIC INFORMATION ON THE COURSE			
Course:	Nutritional Diagnosis and Salinity		
Course code:	70784241	Plan:	Máster en Horticultura Mediterránea bajo Invernadero
Academic Year:	2022 23	Undergraduate/Graduate:	Máster Universitario Oficial
Degree Year:	1	Type:	
Duration:	2nd Semester		
Course Coordinator:	Salas Sanjuan, María del Carmen		

TIME DISTRIBUTION ACCORDING TO REGULATIONS	
Credits:	3
Total time:	75
USE OF LEARNING PLATFORM (Teaching support, Multimodal, or Virtual):	Multimodal

TEACHERS			
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OTHER IMPORTANT INFORMATION

Content Justification

Interpret the main visual indicators of the nutritional and water status of plants grown in protected farming systems. Know the methods and instrumentation necessary to characterize the nutritional status of crops (collection, conservation and analysis of plant samples, soil and substrate). Interpret the results of the analyzes of plant samples, soil, substrates, etc. Know the effect of salinity on water and mineral nutrition.

Courses Related in Study Plan

Plant nutrition and Fertilization

Required Knowledge to Address the Course

Plant nutrition, main characteristics of intensive production systems and basic chemistry.

Pre-Required Knowledge

Plant nutrition, main characteristics of intensive production systems and basic chemistry.

COMPETENCES

Basic and General Competences

Basic competences
• *Application of knowledge*
• *Ability to make judgments*

General competences

Key competences University of Almeria
Basic knowledge of the profession
Ability to solve problems
Oral and written communication in their own language

Specific Competences

Diagnose nutritional deficiencies in plants by managing the available diagnostic tools.
Ability to formulate solutions to nutritional problems detected.

LEARNING OUTCOMES

1. The objectives to be achieved during the development of this subject are: - To know the mechanisms and factors that affect the absorption of water and nutrients in plants, and - To know

the tools that allow us to diagnose, analyze and interpret the nutritional status of plants. crops (sampling, conservation of the same, types of analysis, interpretation of results, etc.).- Know how environmental and/or cultural factors affect the nutritional status of plants with special emphasis on the effects of salinity .

PLANNING

Contents

Block 1. Nutritional requirements of intensive crops.
Item 1. Principles of plant nutrition. Nutrient absorption.
Topic 2. Crop nutrition management strategies
Topic 3. Factors that affect plant nutrition. Salinity.
Block 2. Determination of the nutritional status of crops.
Item 4. Available tools for determining the nutritional status of crops. Sampling, analysis and recommendations.
Topic 5. Nutritional diagnosis systems.

Learning System and Methodology / Contingency Plan

In face-to-face hours and/or videoconference, the following teaching methodology will be used:

- Individual study of the theoretical contents.

- Assimilation of the knowledge derived from the subjects taught in the theoretical classes.

With regard to the autonomous work of the student, he must carry out:

- Search for information to carry out the activities and/or practices.

- Elaboration of the memory of the laboratory practices.

- Resolution of the list of activities proposed as individual student work.

Contingency plan for the Covid-19 pandemic.

In the event that the capacity for classrooms and laboratories is maintained with a safe capacity based on health requirements, if the number of students enrolled exceeds this capacity, the class taught in the classroom/laboratory will be broadcast by videoconference in Synchronous (using tools such as Blackboard Collaborate and Google Meet), the university establishing a rotating mechanism for student attendance. Given high levels of health alert, the training activities planned in the Teaching Groups will be taught by videoconference.

The Working Groups will continue with face-to-face teaching according to the established planning. In the face of more restrictive measures agreed by the health authorities, the sessions corresponding to the Working Groups would be held remotely, through synchronous and/or asynchronous online sessions.

Teaching Innovation Activities

The subject participated in the 2016 call 17 Teaching Innovation called Teaching group: 7078 Master's degree Intensive horticulture under greenhouse. The teaching group developed a teaching methodology that integrates the learning of at least 5 subjects of the Master in Mediterranean Horticulture under Greenhouse called "Mineral Nutrition from seed to harvest"The acquisition of knowledge corresponding

to different areas of the protected horticulture sector of a integrated way that facilitates the application of the same and the understanding of the students.

As methodological procedures, practical, group, progressive and varied learning is encouraged through the integration of the concepts of each subject.

As a basic didactic method, the expository methodology is used through the use of master classes that will be summarized generating a document in the form of a video that will be available to the student from the beginning.

Subsequently, the practical demonstration method is used through two types of activities that consist of field and laboratory work through which the student trains to master the explained techniques. This group includes the technical visits that allow the integration of the knowledge acquired during the total development of the work.

As interrogative methods in which the formulation of questions by the teaching staff is used as a teaching method, which together with the student's completion of a test of each of the parts of the work will allow evaluating the acquisition of knowledge. The test as a document will be available to the student at the end of the development of each of the parts in which the work is structured.

The result is part of the material available for the development of the subject and is integrated into Activities 1 and 2

Functional Diversity / Functional Disability

Those students with disabilities or special educational needs can get in contact with the Delegation of the Rector for the Functional Diversity (http://www.ual.es/discapacidad) to receive the appropriate guidance and advice in order to facilitate their instructional, learning and training processes. Likewise, these students may request the implementation of the necessary and suitable adaptations of content, methodology and evaluation that guarantee equal opportunities in their academic development. The processing of any personal data or aggregated information regarding these aforementioned students, in fully compliance with the GDPR, is strictly confidential. Faculties and academic staff lecturing the course referenced by this guide/document will be in charge of applying the recommended adaptations approved by the Delegation of the Rector for the Functional Diversity. This fact will be, therefore, notified to the School or Faculty as well as to the coordinator of the academic course.

COMPETENCY ASSESSMENT

Criteria and Assessment Tools / Contingency Plan

The objective of the evaluation is to verify that the student has assimilated and is capable of integrating, synthesizing and applying the knowledge acquired.

For this, the following activities have been proposed: Directed activities that consist of carrying out activities according to the recommendations indicated in the course, questionnaires on the knowledge imparted in class, laboratory and field practices, and an exam that will consist of a multiple choice test of answers multiple alternatives.

The evaluation also considers the observations of the process through the attendance of the students to tutorials, to the face-to-face practice sessions, and the participation in the virtual and face-to-face course.

Continuous evaluation considers participation in seminars and/or face-to-face classes, attendance and achievement.

For the ordinary and extraordinary evaluation, the following will be assessed:

- Participation in face-to-face activities and use (Examination): 60% Exercises and activities requested during the development of the subject, and

- Carrying out the final written test: (40%)

For the single final evaluation, applicable only to students who adhere to article 8 of the Student Evaluation Regulation, the evaluation system is based on the following activities: Theoretical/practical exam of the subject with the same characteristics and conditions than in the ordinary call. It also considers the observations of the process through the attendance of this type of students to tutorials, to practice sessions (face-to-face and synchronous online if necessary) to workshops that may be proposed, and the delivery of exercises or works that are proposed as electives. . For those students who have not been able to have any contact with the teaching team, this participation will be evaluated with a personal interview with the teaching team.

Follow-Up Mechanisms

• Participation in communication tools (discussion forums, emails)
• Delivery of activities in class
• Delivery of activities in virtual classroom

COURSE MATERIALS

Recommended Course Materials

Basic

- Alberto Pardossi, Luca Incrocci, Maria C. Salas, and Giorgio Gianquinto. Managing Mineral Nutrition in Soilless Culture. CHAPTER 10. Urban Agriculture. Springer International Publishing AG 2017 147. https://doi.org/10.1007/978-3-319-57720-3_10. 2017.
- Datnoff, L., Elmer, W., Huber, D. Mineral Nutrition and Plant Disease.. 2005.

Complementary

- Escalona, A., Salas, M.C., Coutinho, C., Guzmán, M. Crecimiento y concentración de iones en los tejidos de menta y salvia regadas con aguas salinas para su uso en jardinería. Actas de VII Congreso Ibérico de Agroingeniería y Ciencias Hortícolas. . 2013.

Other materials

- Escalona, A., Salas, M.C., Coutinho, C., Guzmán, M. Crecimiento y concentración de iones en los tejidos de menta y salvia regadas con aguas salinas para su uso en jardinería. Actas de VII Congreso Ibérico de Agroingeniería y Ciencias Hortícolas. . 2013.
- Escalona, A., Salas, M.C., Coutinho, C., Guzmán, M.. How does salinity affect mineral ion relations and growth of Lobelia erinus for use in urban landscaping? . Journal of Food, Agriculture & Environment Vol.11 (2): 854-858.. 2013.

- Franco, J.J., Henao, M., Guzmán, M., Cabrera, R.. Determining Nutrient Diagnostic Norms for Greenhouse Roses. HortScience 01/2013; 48:1403-1410.. 2013.
- Salas, M.C.,. USING SUCTION CUP TO IMPROVE THE MONITORING OF SOIL SOLUTION IN A GREENHOUSE FERTIGATED CROP. Acta Horticulturae.

Couse Materials Available in UAL's library

WEBSITES

- https://www.facebook.com/HidroponiayCultivoSinSuelo/
  Información sobre Hidroponía y Cultivo sin suelo