
	<b>PROCESO PARA EL DESARROLLO DE LAS ENSEÑANZAS DE LA ESCUELA DE INGENIERÍAS AGRARIAS</b>		
		<b>CÓDIGO: P/CL009_D002</b>	

## PROGRAMME IN FOOD TECHNOLOGY

Academic course: 2019-2020

Identification and characteristics of the subject					
Code	501122			Créditos ECTS	6
Name (Spanish)	<b>Análisis y Química Agrícola</b>				
Name (English)	Agricultural Analysis and Chemistry				
Degree	ENGINEERING IN AGRICULTURAL AND FOOD INDUSTRIES				
Center	Agricultural Engineering School				
Semester	(2nd)	Type	Compulsory		
Module	Basic				
Subject	Chemistry				
Language	Spanish				
Professor/s					
Name	Room	e-mail	Web link		
<b>Concepción de Miguel Gordillo</b>	<b>D-611</b> Edificio Tierra de Barros	cdemigue@unex.es			
<b>Francisco Javier Viguera Rubio</b>	D-IMAF Edificio Alfonso XIII	<a href="mailto:jviguera@unex.es">jviguera@unex.es</a>			
<b>M<sup>a</sup> Josefa Bernalte García</b>	<b>D-601</b> Edificio Tierra de Barros	bernalte@unex.es			
Field of knowledge	Soil Science and Agricultural Chemistry				
Department	Plant Biology, Ecology and Earth Sciences				
Coordinator (if there is more than one professor)	<b>M<sup>a</sup> Josefa Bernalte García</b>				
Lessons and contents					
Syllabus					
1 Agricultural Analysis					
<b>Lesson 1.</b> Analytical chemistry, chemical analysis, agricultural analysis. Reactions)					

	<b>PROCESO PARA EL DESARROLLO DE LAS ENSEÑANZAS DE LA ESCUELA DE INGENIERÍAS AGRARIAS</b>		
		<b>CÓDIGO: P/CL009_D002</b>	

- Lesson 2.** Agricultural analysis. General operations. Classification of methods.
- Lesson 3.** Separation methods: Introduction. Classification.
- Lesson 4.** Precipitation. Distillation. Extraction.
- Lesson 5.** Separation methods 2. Chromatographic separations. Introduction. Chromatography in column).
- Lesson 6.** Paper and thin layer chromatography.
- Lesson 7.** Gas chromatography.
- Lesson 8.** Ionic exchange chromatography.
- Lesson 9.** Gravimetric methods.
- Lesson 10.** Optical methods of analysis.
- Lesson 11.** Common electroanalytical methods.
- Lesson 12.** Interpretation of irrigation water analysis.

## **2 Agricultural Chemistry**

- Lesson 13.** Precipitation and redox equilibria in food and agriculture.
- Lesson 14.** Chemistry of natural products.
- Lesson 15.** Colloidal solutions. Soil colloids.
- Lesson 16.** Nitrogen, phosphorus and potassium. Fertilizers,
- Lesson 17.** Sulfur, calcium and magnesium. Oligoelements.
- Lesson 18.** Pesticides. Basic concepts.
- Lesson 19.** Chlorine and phosphorous insecticides.
- Lesson 20.** Carbamic and piretroid insecticides.
- Lesson 21.** Other insecticides and fighting strategies.
- Lesson 22.** Fungicides.
- Lesson 23.** Herbicides.

## **PRACTICAL SYLLABUS**

**Practical lesson #1:** Determination of carbonates and acid carbonates in irrigation water

**Practical lesson #2:** Separation of ink pigments by paper chromatography

**Practical lesson #3:** Determination of pH and conductivity in irrigation water

**Practical lesson #4:** Semi-quantitative determination of texture and carbonates in soil

**Practical lesson #5:** Rapid methods to identify some immediate principles

	<b>PROCESO PARA EL DESARROLLO DE LAS ENSEÑANZAS DE LA ESCUELA DE INGENIERÍAS AGRARIAS</b>		
		<b>CÓDIGO: P/CL009_D002</b>	

<b>Practical lesson #6:</b> Practical applications of precipitation equilibria
<b>Practical lesson #7:</b> Seminar on precipitation equilibria
<b>Practical lesson #8:</b> Seminar on redox equilibria