

Academic Year/course: 2021/22

28917 - Ecology and management of agro-industrial byproducts

Syllabus Information

Academic Year: 2021/22

Subject: 28917 - Ecología y gestión de subproductos agroindustriales

Faculty / School: 201 - Escuela Politécnica Superior

Degree: 583 - Degree in Rural and Agri-Food Engineering

ECTS: 6.0

Year: 2

Semester: Second semester

Subject Type: Compulsory

Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The learning process designed for this subject consists of:

- Lectures. Teacher lectures in which participation of the students will be encouraged. Lectures from external experts could be included if available or relevant.
- Practical sessions in ecology will consist of: Practical onsite classroom sessions, a group meeting with the teacher and a field trip.
- Practical activities in 'Gestión de subproductos agroindustrial' will consist of: group meetings with the teacher, problem-solving and study cases in the classroom and computer lab and visits to agricultural and cattle industry facilities

Throughout the entire course, in both theory and practical sessions, activities related to SDGs 12 (Responsible production and consumption), 13 (Climate change) and 15 (Forests, desertification and biological diversity) will be developed.

4.2. Learning tasks

The course includes the following learning tasks:

- Lectures in the classroom. Mainly master lectures with teacher's questioning. The rest corresponds to invited speakers and seminars.
- Special practices. Visits to facilities related to the program
- Classroom practices. Students will previously receive information in order to be prepared for the practice. Some of them will be in computer classrooms.
- Tutorials. For the teacher's survey of the theory and practice, activities individual and team, tutorials will be available
- Reports. Teachers will offer different Ecology, Environmental and Agroindustrial By-products subjects to the students. They will write a report on these subjects, following the teacher's advice.

4.3. Syllabus

The course will address the following learning tasks:

Theory program

- Ecology
- Organisms and their environment.
- Population ecology.
- Interactions among species.
- Biogeochemical cycles
- Compost process as an ecosystem example.
- Ecosystem services
- Management of Agroindustrial by-products
- Introduction to Environmental Management
- Agroindustries
- Waste and Agroindustry By-products legislation
- Management of Agroindustry wastes
- The technology of slaughter and slaughter by-products
- The technology of cereals and cereal by-products

Practical program

- Ecology
- Practices focused on the recognition of ecological processes and ecosystems
- Management of Agroindustry by-products
- Design and control of a compost process. Part 1
- Start of the team report
- The search for agroindustry facilities affected by regulations
- Design and control of a compost process. Part 2
- Report presentation
- The approximate overall distribution of the hours of work is at the next table. It can be the subject to changes regarding the availability of facilities for practices and the specific yearly academic calendar.

4.4. Course planning and calendar

Calendar of on-site lectures and report presentations

A 6 ECTS subject will need an average of 150 hours of work. The following table shows a breakdown of the different activities.

	Ecology	By-products
Activity	Students hours	Students hours
<i>On-site hours</i>	30	30
Lecture	15	15
Classroom practices	10	10
Special practices	5 (fieldwork)	5 (facilities)
<i>Off-site work</i>	45	45
Tutorials	10	15
Study	32,5	27,5
<i>Evaluation</i>	2,5	2,5
Total	75	75

Activity and week	1	2	3	4	5	6	7	8	9	10	11	12
	11-17 feb	18-24 feb	25 feb-3 mar	4-10 mar	11-17 mar	18-24 mar	25-31 mar	1-7 abr	8-14 abr	15-21 abr	22-28 abr	29-5 ma
							Festivo UZ 25 mar(lun)			Vac SS Comienzo 15 abr (lun)	Fin vac SS 22 abr (lun) Festivo 23 (mar)	Festivo 1 (m
On-site												
Theory	2	2	2	2	2	2	2	2	2		2	2
Problem-solving		2		2		2	2	2	2			2
Lab					2							
Teamwork												
Field trips												
Tutorial												
Assessment activities									2			
Off-site												
Autonomous work	4	2	4	2	4	2	4	2	2	6	4	4
Teamwork		2		2	2	2			2		2	2
TOTAL	6	8	6	8	10	8	8	6	10	6	8	10

Activity and week

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

On-site

Theory 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

Problem solving	2	2	2		2	2	2	2											
Lab	2	2	2		2								2						
Team work																			
field trips				3									2						
Tutorial																			
Assessment activities												2					4		
<i>Off-site</i>																			
Autonomous work	2	3	3	3	3	3	3	4	4	1	3	3	4	2	1	4	7	7	
Teamwork				4	2	2	2	3	3		2	2	4	3					
TOTAL	2	7	7	11	9	9	12	7	7	7	5	9	14	9	7	8	9	7	4

4.5. Bibliography and recommended resources

- BB** Begon, Michael. Ecology : from individuals to ecosystems / Michael Begon, Colin R. Townsend, John L. Harper. 4ª ed. Malden, MA : Blackwell Pub., cop. 2006 [Comentario del profesor: O cualquiera de sus ediciones]
- BB** García Morales, José Luis, coord. De residuo a recurso. El camino hacia la sostenibilidad. I. Recursos orgánicos. 3. Residuos agroalimentarios. Madrid: Mundi-Prensa, 2014 [Comentario del profesor: libro electrónico]
- BB** Smith, Thomas Michael. Elements of ecology / Thomas M. Smith, Robert Leo Smith. 9th. ed., global ed. Boston [etc.] : Pearson Education, cop. 2015
- BB** Tchobanoglous, George. Gestión integral de residuos solidos / George Tchobanoglous, Hilary Theisen, Samuel Vigil ; traducción y revisión técnica Juan Ignacio Tejero Monzón, José Luis Gil Diaz, Marcel Szanto Narea. [1a. ed. en español, reimpr.]. Madrid [etc.] : McGraw-Hill, D.L. 1996
- BC** Castells, J.E. Aprovechamiento de residuos agrícolas y forestales. Madrid: Díaz de Santos, 2012 [Comentario del profesor: libro electrónico]
- BC** Sánchez Báscones, Mercedes, coord. De residuo a recurso. El camino hacia la sostenibilidad. I. Recursos orgánicos. 2. Residuos ganaderos. Madrid: Mundi-Prensa, 2016 [Comentario del profesor: libro electrónico]
- BC** Vargas García, Mª Carmen, coord. De residuo a recurso. El camino hacia la sostenibilidad. I. Recursos orgánicos. 1. Residuos agrícolas. Madrid: Mundi-Prensa, 2014 [Comentario del profesor: libro electrónico]

LISTADO DE URLs:

Guía técnica para la clasificación de residuos peligrosos (MITECO 2020)

[
<https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/prevencion-y-gestion-residuos/guiatecnicaclasificacion>
]

Guías de Mejores Técnicas Disponibles por Sectores. Ministerio de Medio Ambiente y Medio Rural y Marino

[<http://www.prtr-es.es/documentos/documentos-mejores-tecnicas-disponibles>]

Ley 22/2011, de 28 de julio, de residuos y suelos contaminados

[<http://www.boe.es/boe/dias/2011/07/29/pdfs/BOE-A-2011-13046.pdf>]

Real Decreto 815/2013, de 18 de octubre, por el que se aprueba el Reglamento de emisiones industriales y de desarrollo d
prevención y control integrados de la contaminación

[<https://www.boe.es/eli/es/rd/2013/10/18/815>]

Real Decreto Legislativo 1/2016, de 16 de diciembre, por el que se aprueba el texto refundido de la Ley de prevención y co
contaminación

[<https://www.boe.es/eli/es/rdlg/2016/12/16/1>]

The updated recommended bibliography can be consulted in:

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=28917>