Universidad Zaragoza

Academic Year/course: 2021/22

69752 - Waste and byproducts

Syllabus Information

Academic Year: 2021/22
Subject: 69752 - Waste and byproducts
Faculty / School: 100 - Facultad de Ciencias
Degree: 627 -
ECTS: 6.0
Year: 01
Semester: First semester
Subject Type: Compulsory
Module:

1. General information

1.1. Aims of the course

The *Wastes and by-products* course is designed so that students are able to:

- Contextualise understanding the waste sector in the context of Circular Economy.

- Know the main of material leaks in the current economic system.

- Understand the philosophy of waste legislation and the measures that promote to move towards Circular Economy.

- Recognise and analyse specific problems and inspiring examples of the application of this philosophy in our environment.

These approaches and objectives are aligned with Sustainable Development Goal (SDG) No. 12 (Responsible Consumption and Production) of the United Nations 2030 Agenda (https://www.un.org/sustainabledevelopment/es/), such that the acquisition of learning results of the course provides training and competence to contribute to a certain extent to its achievement.

1.2. Context and importance of this course in the degree

The course of *Wastes and by-products* is taught in the first semester to all students of the Master's Degree in Circular Economy. The couse is taught from the Public University of Navarra.

1.3. Recommendations to take this course

Active and synchronous participation in theoretical classes (Exhibitions and seminars) and practical workshops is recommended. In addition, these activities can be revised by being recorded and hosted on the learning platform. The main axis of the subject consists of the group resolution of an applied practical case in which waste generation must be prevented. The case will be proposed by the students and it is recommended that the case be entertaining and motivating for the students. It is recommended that the groups be made up of people from a close geographical environment to facilitate group work.

2. Learning goals

2.1. Competences

BASIC COMPETENCES

CB6 - Have demonstrated knowledge and understanding that is founded upon and extends and/or enhances that typically associated with the first cycle, and that provides a basis or opportunity for originality in developing and/or applying ideas, often within a research context.

CB7 - Can apply their knowledge and understanding, and problem solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.

CB8 - Have the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgements.

CB9 - Can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and nonspecialist audiences clearly and unambiguously.

CB10 - Have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous.

GENERAL COMPETENCES

CG1 - Obtain information in Spanish and English using information technologies efficiently

CG2 - Manage, critically analyse and synthesise information

CG3 - Critically reflect in a systemic way and using causal relationships

CG4 - Formulate, analyse, evaluate and compare in a multidisciplinary way new or alternative solutions for different problems

CG5 - Work in interdisciplinary groups

CG6 - Transmit information efficiently through information and communication technologies

CG7 - Develop management skills (decision making, goal setting, problem definition, design, and evaluation)

CG8 - Properly manage available resources on time

SPECIFIC COMPETENCES

CE4 - Describe the problems posed by the different waste types and techniques for their minimisation.

CE7 - Apply the legal requirements for the implementation of Circular Economy.

2.2. Learning goals

The student, passing this subject, achieves the following results:

1. Know the problems of the different types of materials that leak from the system.
2. Know processes for the use or elimination of different wastes, taking into account the applicable legislation.
3. Know the scope and limitations of the different management systems.
4. Know the scope and limitations of secondary raw materials.

2.3. Importance of learning goals

Students who pass this subject will have developed a sensitivity and ability to analyse their environment with a circularity criterion. In addition, they will be able to locate accurate and updated information on waste, on the applicable legislation. At the same time, they will be able to identify and assess Circular Economy practices and develop proposals to improve the circularity of a specific activity.

3. Assessment (1st and 2nd call)

3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

The course will be evaluated using two asessment methods (continuous and global), so that the student will be assigned the grade that is most beneficial to him. For this, the grades obtained in the following tests will be used:

* Two reports (rated I1 and I2). Each report will consist of a memory on a work proposed in the class workshops. The structure and format of the required reports will be communicated to students through moodle. The reports will be sent to the teacher electronically.

* Two seminars (rated S1 and S2). A seminar will consist of the elaboration of the memory, exhibition and public defense of both applied works on the matter. One will be short range (S1) and the other long range (S2). The report will be done individually or in groups. For the qualification, it will be assessed whether the work is innovative and original, follows a coherent structure and provides an appropriate bibliography, as well as clarity and order in the exposition and maturity in the debate.

* Final short, long and/or development answer test (scored as F). The test will be held simultaneously at each university under conditions that guarantee the proper identification of students and the impossibility of fraud in them.

The grades obtained by each student in the aforementioned evaluation activities will be weighted according to the following formulas:

Formula 1:

Final mark of the course: $0.2 \times I1 + 0.2 \times I2 + 01 \times S1 + 0.3 \times S2 + 0.2 \times F$

Formula 2:

Final grade for the course: F

It is not necessary to achieve minimum marks in the evaluation tests for the application of the above formulas. The final grade for the course will be the best grade obtained in each case after applying formula 1 and formula 2.

The number of official exam sessions to which enrollment entitles (2 per enrollment) as well as the consumption of these calls will be adjusted to the Rules of Permanence in Master's Studies and the Rules of Learning Assessment of the University of Zaragoza (https://ciencias.unizar.es/normativas-asuntos-academicos). To this last regulation, the general criteria for the design of the tests and the grading system will also be adjusted, and according to the same, the time, place and date on which the review will be held when publishing the qualifications will be made public.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

This subject seeks the active involvement of the students and their training for the real application of the knowledge studied in their environment. Therefore, in addition to lectures, participatory workshops will be held and a long-range group project that will consist of the development of a proposal to improve the circularity of real activity in its environment.

The theoretical aspects are presented through dialogued lectures and seminars, given by external guests of the course and others taught by the volunteer students themselves. All these sessions can be reviewed in video format on the platform. The practical aspects consist of conducting practical workshops that will result in several simple short-range evaluable deliverables. The central axis of the subject is the resolution of a group exercise in which a proposal will be made to prevent the generation of waste from a nearby activity.

Finally, on a voluntary basis and complementary to the subject, the possibility of technical visits will be offered, as well as other face-to-face practical activities.

All these training activities will be supported by face-to-face tutorials and/or by videoconference.

4.2. Learning tasks

Dialogue lecture class: 10 hours

Workshops: 3 hours

Student seminars: 2 hours

External seminars: 13 hours

Preparation of work (Deliverables + Long-range project): 60 hours

Study and reading: 60 hours

Assessment tests (Exam and presentation of projects): 2 hours

4.3. Syllabus

1. Is there waste in Circular Economy?
2. Main streams of "waste".
3. Legislation: Waste Framework Directive.
4. Plans, policies, and strategies.
5. Promotion of the Circular Economy.
6. Producer responsibility.
7. Directive on industrial emissions and other legislation.
8. The circle of biological materials (Problems and inspiring examples).
9. The circle of technical materials (Problems and inspiring examples).
10. Virtuous circles in-depth (Urban waste, Agri-food system).
11. Where is the circular economy going in Europe?
12. Seminars: Pooling of proposals.

4.4. Course planning and calendar

Information on schedules, calendar, and exams is published on the Master's page on the website of the Faculty of Sciences of the University of Zaragoza (https://ciencias.unizar.es/master-en-economia-circular). Presentation of reports will be carried out according to the calendar that will be announced in due course through the Moodle page of the subject.

4.5. Bibliography and recommended resources

http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=69752&Identificador=C74177