

COURSE GUIDE – EXTENDED FORM

Academic year 2026 – 2027

1. Program information

1.1 University	University of Oviedo
1.2 Faculty	Faculty of Chemistry
1.3 Department	Chemical and Environmental Engineering
1.4 Field	Chemical Engineering
1.5 Study level	Master
1.6 Specialization	Chemical and Biochemical Process Technology - CBPT

2. Course information

2.1.1 Course name		Seminars on Circular Economy						
2.1.2 Course code						2.1.3. Course category Fundamental/Specialized/Complementary		S
2.2 Course instructor		Salvador Ordóñez García						
2.3 Course instructors for applied activities (S, L, P, Pr)				Salvador Ordóñez García Laura Faba Peón				
2.4 Year of study ²	1	2.5 Semester ³	2	2.6 Evaluation type ⁴	E, A	2.7 Course type ⁵	DOB	

3. Amount of time estimated for course activities (hours / term)

3.1 Hours /week	2.5	3.2 course	2.5	3.3a sem.		3.3b laboratory		3.3c project		3.3.d. practice	
3.4 Total hours from curriculum ⁶	35	3.5 course	35	3.6a sem.		3.6b laboratory		3.6c project			
Time spent for related activities ⁷										Hours	
Study of recommended books, course support, scientific papers and course notes										25	
Practical skills development										28	
Preparation of seminars / laboratory works / project phases / home works / presentations										30.5	
Evaluation ⁸										3	
Other activities:											
3.7 Total hours of individual study ⁹		86.5									
3.8 Total hours per semestre ¹⁰		121.5									
3.9 Number of credits		4.5									

4. Prerequisites (optional)

4.1 Curriculum ¹¹	
4.2 Learning outcomes	

5. Requirements

5.1 Conditions for course delivery ¹²	Blackboard, video projector
5.2 Seminar / Laboratory / Project delivery requirements ¹³	Blackboard, video projector

6. Overall objective of the course

The course aims to provide students knowledge about the scope of Circular Economy and its application in the food, biotechnology, material and chemical industries.

7. Learning outcomes

Knowledge	The student / graduate will: 1. Have a knowledge and understanding of the scope of Circular Economy and its impact in the Chemical and Process industries.
Skills	The student / graduate will: 2. Be able to apply Circular Economy management tools to assess the environmental impact of process and products. 3. Be able to identify improvements in the process, raw materials and products to reduce the environmental impact of Chemical and Process industries.
Responsibility and autonomy	The student / graduate will: 4. Be aware of legislation, technical standards and good practices to reduce the environmental impact of process and products.

8. Teaching methods

The teaching process will involve participatory seminars and debates with professionals from industries, research centres and public administration. These professionals will present case studies of practical implementation of the Circular Economy principles in their respective fields (e.g., food, biotechnology, material and chemical industries). The module will be completed with visits to selected facilities (industries and/or research centres).

9. Course content

9. 1. Courses ¹⁵	Teaching methods	Time allocation
9.2a Seminar	Working methods ¹⁶	Time allocation
Circular Economy: origin and evolution of the concept Waste recycling and Circular Economy Tools for Circular Economy Innovation towards a real industrial symbiosis Case studies of Circular Economy in the chemical and process industries (oil, petrochemical, food, biotechnology, material, etc.) Visit to industrial facilities	Conferences of professionals in the field.	35 hours

10. Evaluation

Activity type	10.1 Evaluation criteria	10.2 Evaluation method	10.3 Percentage of the final grade
10.5a Seminar	Ability to apply learned knowledge in practice. Ability for analysis, personal interpretation, originality, and creativity	Active participation in activities. Assignments.	100%
10.6 Conditions for passing			
Grades from 0 to 10 points will be awarded to each activity of the course. A minimum grade of 5 certifies the achievement of the minimal learning outcomes required for the course and the awarding of the corresponding study credits.			

Date:

Course instructor: Salvador Ordóñez García

Course instructors for applied activities: Salvador Ordóñez García

Date of approval by the department:

Head of Department: Manuel Rendueles de la Vega

Date of approval by the Faculty Council:

Dean, José Javier Borge Álvarez

Bachelor's / Master's degree.

² For Bachelor's: 1-4; for Master's: 1-2.

³ For Bachelor's: 1-8; for Master's: 1-4.

⁴ Exam (E), assessment (A) – according to the curriculum.

⁵ DOB – mandatory course, DOP – optional course, DFA – elective course;

⁶ Duration equals 14 weeks multiplied by the number of hours listed at point 3.1 (similarly for points 3.5 and 3.6abc).

⁷ The lines below refer to individual study; total is completed at point 3.7.

⁸ Between 2 and 6 teaching hours, not included in individual study.

⁹ Total number of individual study hours (sum of values from previous lines).

¹⁰ Total of direct teaching hours (3.4) plus individual study hours (3.7); must equal the number of credits (3.9) multiplied by 27 hours per credit.

¹¹ Prerequisite courses that must be passed previously or their equivalents are indicated.

¹² Teaching resources: blackboard, video projector, flipchart, specific teaching materials, etc.

¹³ Technical equipment: computers, software packages, experimental stands, etc

¹⁴ Learning outcomes presented as knowledge, skills, responsibility, and autonomy specific to the course, aligned with level 7 of the National Qualifications Framework (NQF) and adapted to the type of university program. For research master's programs, these include competences necessary for conducting independent scientific research (<https://www.aracis.ro/wp-content/uploads/2025/07/Standarde-specifice-masterat.pdf>).

¹⁵ Titles of chapters and paragraphs.

¹⁶ Teaching methods: discussions, debates, presentations and/or paper analyses, exercises and problem solving.

¹⁷ Practical demonstrations, exercises, experiments.

¹⁸ Case studies, demonstrations, exercises, error analysis, etc.