

## Waste Management

Code: 42408  
ECTS Credits: 6

**2024/2025**

Degree	Type	Year
4313784 Interdisciplinary Studies in Environmental, Economic and Social Sustainability	OT	0

### Contact

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### Teachers

Cristina Sendra i Sala

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### Teaching groups languages

You can view this information at the [end](#) of this document.

### Prerequisites

No specific knowledge required.

### Objectives and Contextualisation

Provide the knowledge needed to manage waste as a resources, energy saving and impact reduction, through Circular Economy Design framework.

### Competences

- Analyse, summarise, organise and plan projects related to the environmental improvement of product, processes and services.
- Communicate and justify conclusions clearly and unambiguously to both specialised and non-specialised audiences.
- Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
- Work in an international, multidisciplinary context.

## Learning Outcomes

1. Choose and propose the most sustainable waste management system under current legislation and the objectives of international policies.
2. Communicate and justify conclusions clearly and unambiguously to both specialised and non-specialised audiences.
3. Estimate greenhouse gas emissions attributable to waste.
4. Estimate the main environmental impacts of waste management systems, whether urban, industrial or agricultural.
5. Quantify the chances of reducing environmental impacts and GHG on the basis of new technologies, methodologies and waste management systems.
6. Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
7. Work in an international, multidisciplinary context.

## Content

### Block 1 Waste management in a linear model

- Reduction. Collection. Transportation compaction Evaluation. classification
- Landfills and estimation of their emissions.
- Classification of waste. Definition of a management plan.

### Block 2 Waste management in the Technical Cycle

- Recyclable materials: plastic, glass, paper and cardboard, cans, batteries and accumulators.
- Recycling plants. Ecoparks and recovery areas.

### Block 3 Waste management in the biological cycle

- Composting and anaerobic digestion plants. Ecoparks and recovery areas.
- Recycling plants. Ecoparks and recovery areas. Energy saving and recycling of materials and recovery of materials and energy. Organic matter. Other recyclable materials.
- Reapply Industrial Ecology tools (industrial symbiosis, exchange of flows, MFA, LCA Exegetical Analysis, Ecodesign, carbon footprint, ...) to design an innovative and sustainable waste management system.

### Block 4. Product design eliminating the concept of waste, with Cradle to Cradle principles and the circular econor

## Activities and Methodology

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Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Lectures	27	1.08	
Visits to case studies	3	0.12	
Type: Supervised			
Possible Visit to industrial plants	7	0.28	
Seminars Preparation/Oral Expositions	15	0.6	
Tutoring	18	0.72	
Type: Autonomous			
Preparation of reports	24	0.96	
Reading of reports/papers	20	0.8	
Self-study	30	1.2	

Lectures/oral expositions

Classroom practices including interactive discussions and exercises.

Seminars

Preparation of reports, individual and collaborative

Autonomous activity

Reading reports/papers of interest

All these types of tasks will be oriented at Open-ended & real world problem-based learning (PBL)

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

## Assessment

### Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Questionnaires, problem solving, and other evaluable tests	50 %	0	0	1, 3, 4, 5, 6
Reports delivery and oral presentations	50 %	6	0.24	1, 2, 3, 4, 6, 7

This subject will be assessed continuously.

50% of the grade will be obtained by completing quizzes and evaluable assignments.  
The remaining 50% will be obtained through group work and its oral presentation.  
This module does not offer the Single Assessment modality, in accordance with the regulations.

Students who do not complete the final work and the corresponding oral presentation will not be evaluated. Students who do not complete the final work and the corresponding oral presentation will not be evaluated.

In case of overall failure of the subject in the first evaluation, and as long as and when at least 2/3 of the required credits have been obtained, the student will be allowed to retake the subject.

## Bibliography

- Materiales del campus virtual de la UAB. (intranet UAB, campus virtual)
- Handbook Zero Waste, ZERO WASTE PROJECT (1G-MED08-533).  
[http://icta.uab.cat/ecotech/zero\\_waste/Handbook/Final\\_Handbook.pdf](http://icta.uab.cat/ecotech/zero_waste/Handbook/Final_Handbook.pdf)
- Cara Brower; Rachel Mallory; Zachary Ohlman. 2005. *Experimental Eco>Design*. Suiza. Editorial Rotovision. ISBN 2-88046-817
- Han Brezet, Carolien Van Hemel. 1997. *Ecodesign. A promising approach to sustainable production and consumption*. United Nations Publications, Paris Henrik Wenzel; Michael Hauschild; Leo Alting. 1997. *Environmental Assessment of Products (vol. 1). Methodology, tools and case studies in product development*. Chapman & Hall
- Bilitewski, B., Härdtle, G., Marek, K., Weissbach, A., Boeddicker, H. Waste management. 1997. Springer (Germany).
- Lund, H. F., Manual McGraw-Hill de reciclaje. McGraw-Hill/Interamericana de España. 1996. (Madrid).
- Landreth, R. E., Rebers, P. A. Municipal Solid Wastes. Problems and Solutions. CRC Press, Inc., 1997. (USA)
- Solid waste processing and resource recovery. Handbook of environmental engineering. Vol 2. Lawrence K. Wang i Norman C. Pereira. Clifton (1980).
- Perry's Chemical engineer's handbook. (section 26-31).
- Roger Tim Haug. Compost engineering. Principles and practice. Technomic Publishing C.Inc. 1980. (Lancaster).
- Tchobanoglous, G., Theisen, H., Vigil, S. Gestión integral de residuos sólidos. McGraw-Hill. Madrid (1994).
- Cradle to Cradle Product Innovation Institute [www.c2ccertified.org](http://www.c2ccertified.org)

## Software

Not applicable.

## Language list

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Name	Group	Language	Semester	Turn
(TEm) Theory (master)	1	English	first semester	afternoon