

**Environmental Management Tools in Companies
and Governments**

Code: 102820
ECTS Credits: 6

Degree	Type	Year	Semester
2501915 Environmental Sciences	OT	4	0

Contact

Name: Vanessa Abad Cuñado
Email: Vanessa.Abad@uab.cat

Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers

Susana Toboso Chavero

Prerequisites

Although there are no official prerequisites, it is highly recommended that the student have studied the subject "Fundamentals of Environmental Engineering" (third year). It is also convenient to have taken "Contamination chemistry" and "Environmental Assessment of Plans, Programs and Projects" (both in the third year).

Objectives and Contextualisation

The objectives of the subject *Environmental management tools* in companies and institutions are:

1. To show the relationships between company and the environment and their evolution.
2. Work on the tools to establish and improve these relationships.
3. Give guidelines to determine the tool or set of tools that can be applied in a specific case. Apply these tools to different productive and / or service activities.

Competences

- Adequately convey information verbally, written and graphic, including the use of new communication and information technologies.
- Analyze and use information critically.
- Demonstrate adequate knowledge and use the most relevant environmental tools and concepts of biology, geology, chemistry, physics and chemical engineering.
- Demonstrate initiative and adapt to new situations and problems.
- Develop analysis and synthesis strategies regarding the environmental implications of industrial processes and urban management
- Information from texts written in foreign languages.
- Learn and apply in practice the knowledge acquired and to solve problems.

- Teaming developing personal values regarding social skills and teamwork.
- Work autonomously

Learning Outcomes

1. Adequately convey information verbally, written and graphic, including the use of new communication and information technologies.
2. Advise and arrange eco-labels.
3. Analyze and use information critically.
4. Apply the rules, laws and regulations pertaining to each situation.
5. Demonstrate initiative and adapt to new situations and problems.
6. Emission audits.
7. Information from texts written in foreign languages.
8. Learn and apply in practice the knowledge acquired and to solve problems.
9. Making decisions globally considering technical, economic, social and environmental aspects.
10. Recognize the role of environmental engineering in preventing and solving environmental and energy problems, according to the principles of sustainable development.
11. Teaming developing personal values regarding social skills and teamwork.
12. Work autonomously

Content

1. Company and the Environment

Relationship environmental management and company: prevention, correction, conservation and improvement.

2. Environmental management systems and environmental audits

Initial environmental evaluation. Environmental policy. Best available techniques. ISO and EMAS. Planning of the SGMA. Implementation of the SGMA. Verification and corrective action. Management review. Environmental declaration. Certification and / or verification. Environmental audits. Economic study Practical cases

3. Life Cycle Analysis. Eco-efficiency. Eco-labels

Basics Antecedents Stages of an ACV study. Evaluation of the improvements to incorporate into a product. Possibilities and limitations of LCA. Examples of application. Efficiency. Eco-labels Legal framework.

4. Industrial Ecology and "Green Engineering"

What they are and what has been their evolution. Experiences of industrial ecology. Tools and strategies. Practical cases.

5. Other methodological tools

Design for the environment (DFE). Mathematical Flows Analysis (AFM-MFA). Analysis of Substance Flows (AFS-SFA)

Methodology

The development of the course is based on the following activities:

Theoretical classes: The student acquires the own knowledge of the subject attending the master classes and complementing them with the personal study of the explained subjects. In addition, the case study method will be applied to reinforce the knowledge within the theory classes.

Classroom practices: Applied the knowledge acquired to the theoretical classes through practical cases. In classroom practices, there must be a strong interaction between students and teachers in order to complete and deepen the understanding of the concepts introduced in the theoretical classes. Students will work individually or in groups according to the type of case to be resolved.

Cooperative and collaborative activities outside the classroom: preparation and elaboration of material in groups.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Classroom practices	14	0.56	3, 4, 8, 2, 5, 7, 9, 1, 12, 11
Extern visits	2	0.08	3, 5, 10
Seminars	3	0.12	3, 4, 8, 2, 5, 7, 9, 10, 1, 12, 11
Theoretical classes	26	1.04	3, 4, 2, 5, 9, 6, 10
Type: Autonomous			
Cooperative and collaborative activities outside the classroom	20	0.8	3, 4, 8, 5, 7, 9, 10, 1, 12, 11
Study	77	3.08	3, 4, 8, 2, 5, 7, 9, 6, 10, 12

Assessment

The competences of this subject will be evaluated through:

- a) Two partial tests that will contribute 40% of the note each. The tests will be carried out in the calendar established by the degree with this objective.
- b) Cooperative and collaborative activities carried out inside and outside the classroom (in a group). They will have a weight of 20% in the final note.

To pass the subject it is essential:

- a) A minimum of 4 points (out of 10) in each of the two partial tests.
- b) A minimum of 4 points (out of 10) in cooperative and / or collaborative activities.
- c) A minimum of 5 points (over 10) in the average of partial tests and cooperative and collaborative activities, according to the weighting established previously.

A recovery test will be performed. The student will go to the recovery exam, if:

- a) The note is below 4 in one or both partial tests.
- b) The average mark (partial tests and activities) is below 5.

In any case, in order to be able to attend the recovery, the student has had to have previously evaluated continuous assessment activities that are equivalent to 2/3 of the final mark.

In case the evaluation of any of the parts does not ultimately exceed the minimum required, the numerical note of the file will be the lowest value between 4.5 and the weighted average of the notes.

Cooperative and collaborative activities cannot be recovered, so the student will be suspended if the grade of these activities falls below the minimum of 4.

The student who doesn't present at the first partial test will be considered Non-Valuable and this will be the qualification that will be obtained from the subject. If a student presents at the first partial test and not at the second will get the qualification of not approved.

Without prejudice to other disciplinary measures that are deemed opportune, and in accordance with the current academic regulations, their irregularities committed will be classified with zero for the student who can lead to a variation of the qualification of an evaluation act. Therefore, plagiarizing, copying or letting copy any evaluation activity will imply suspend it with a zero and cannot be recovered in the same academic year. If this activity has a minimum associated mark, then the subject will be suspended.

Apart from the partial tests already announced in the examining calendar of the degree, the dates corresponding to the other evaluation activities will be announced on the Virtual Campus.

This platform should be consulted regularly, which will also provide various information on how the course works.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Cooperative and collaborative activities outside the classroom	20	2	0.08	3, 4, 8, 5, 7, 9, 10, 1, 12, 11
First partial test	40	3	0.12	3, 4, 8, 5, 9, 6, 12
Second partial test	40	3	0.12	3, 4, 8, 2, 5, 9, 10, 12

Bibliography

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Guia pràctica per a la implantació i d'un sistema de gestió mediambiental. Departament de Medi Ambient, Generalitat de Catalunya, Barcelona, 2000.

Seoánez M, Angulo I., MANUAL DE GESTIÓN MEDIOAMBIENTAL DE LA EMPRESA. Ed. Mundi-Prensa, Madrid, 1999.

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Ayres R. U., Ayres L. W. A Handbook Of Industrial Ecology. Edward Elgar Publishing Limited, Cheltenham (UK), 2002.

Kalundborg Symbiosis, <http://www.symbiosis.dk/en>.

TECNOLOGIA I SOSTENIBILITAT. Càtedra UNESCO de Sostenibilitat, Universitat Politècnica de Catalunya, <http://tecnologiaisostenibilitat.cus.upc.edu>.

ECOLABEL, European Commission, Environment, <http://ec.europa.eu/environment/ecolabel/>.

Medi Ambient i Sostenibilitat, Departament de Territori i Sostenibilitat, Generalitat de Catalunya,
<http://www20.gencat.cat/portal/site/mediambient/menuitem.685af0bd03466a424e9cac3bb0c0e1a0/?vgnextoid=4>