

Course guide

320175 - ECODIS - Ecodesign

Last modified: 19/04/2023

Unit in charge:	Terrassa School of Industrial, Aerospace and Audiovisual Engineering	
Teaching unit:	205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering.	
Degree:	BACHELOR'S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING (Syllabus 2010). (Optional subject).	
Academic year: 2023	ECTS Credits: 6.0	Languages: English

LECTURER

Coordinating lecturer: Gemma Molins Duran

Others:

PRIOR SKILLS

To achieve the objectives of this course students may have passed the course
TECHNOLOGY AND ENVIRONMENTAL SUSTAINABILITY.

Students must also have obtained some generic skills such as ability to synthesize and reasoning, teamwork and respect for people

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Transversal:

1. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.
2. SUSTAINABILITY AND SOCIAL COMMITMENT. Being aware of and understanding the complexity of social and economic phenomena that characterize the welfare society. Having the ability to relate welfare to globalization and sustainability. Being able to make a balanced use of techniques, technology, the economy and sustainability.
3. THIRD LANGUAGE. Learning a third language, preferably English, to a degree of oral and written fluency that fits in with the future needs of the graduates of each course.
4. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.

TEACHING METHODOLOGY

This course is based on learning through projects. There will be theoretical sessions with the presentation of concepts, techniques and procedures combined with workshops.

In theoretical sessions it will be introduced the basis of the subject with practical examples to facilitate understanding.

The workshops will consist of practical problems to guide towards the realization of the project of the course.

Students, independently, will assimilate concepts and propose solutions to the problems.

The appropriate methodology will be used to ensure that learning is the result of the efforts of the students in the development of the project.

If possible, within the course activities visits to organizations will be scheduled. These visits are scheduled throughout the year depending on the availability in each case.

LEARNING OBJECTIVES OF THE SUBJECT

The objectives of the course are to enable students to:

- Identify and assess the main impacts of a product or service
- Apply ecodesign strategies in a product or service
- Use practical tools for ecodesign
- Apply the knowledge acquired during the course and the degree in the project development

STUDY LOAD

Type	Hours	Percentage
Hours small group	30,0	20.00
Hours large group	30,0	20.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

Topic 1: Ecodesign, an introduction

Description:

- Sustainable development
- Ecodesign
- Life cycle thinking
- Tools
- Regulations

Full-or-part-time: 4h

Theory classes: 4h

Topic 2: Ecodesign strategies

Description:

- Ecodesign strategies
- Ecodesign tools and methods
 - o Life cycle assessment (LCA)
 - o Other analysis methods and tools
 - o Integrated software as an improvement tools

Full-or-part-time: 43h

Theory classes: 16h

Guided activities: 2h

Self study : 25h

Topic 3: Ecodessign examples

Description:

- Ecodesigned products
- Ecodesign communication (EPD and Ecolabels)

Full-or-part-time: 13h

Theory classes: 8h

Self study : 5h



Topic 4: Ecodesign project

Description:

- Ecodesign project

Full-or-part-time: 90h

Laboratory classes: 30h

Self study : 60h

ACTIVITIES

LIFE CYCLE THINKING WORKSHOP

Description:

After a basic introduction, students will be guided through a series of exercises to have them go through the life cycle thinking process themselves

Specific objectives:

Give students basic familiarity with core concepts

Introduce LCA as a way of screening and comparing alternative solutions

Material:

Posted in ATENEA

Delivery:

To upload a document to ATENEA with the results and conclusions from the workshop

10% of the final grade

Full-or-part-time: 2h

Theory classes: 2h

PROJECT ELECTION

Description:

Group election and selection of the item that the ecodesign project will focus on

Specific objectives:

Give students basic familiarity with core concepts

Introduce LCA as a way of screening and comparing alternative solutions

Material:

Posted in ATENEA

Delivery:

Upload the document to ATENEA

2% of the final grade

Full-or-part-time: 2h

Self study: 2h



PRODUCT MANUFACTURING PROCESS DESCRIPTION

Description:

Description of the manufacturing process of the item that is going to be ecodesigned

Specific objectives:

Study the manufacturing process in order to find point to improve

Material:

Posted in ATENEA

Delivery:

Upload the document to ATENEA

8% of the final grade

Full-or-part-time: 10h

Laboratory classes: 2h

Self study: 8h

ENVIRONMENTAL IMPACT ASSESSEMENT

Description:

Assess the environmental impact of a product

Specific objectives:

To make an environmental assessment

Material:

Posted in ATENEA

Delivery:

Upload the document to ATENEA

15% of the final grade

Full-or-part-time: 16h

Laboratory classes: 4h

Self study: 12h

PROPOSALS TO IMPROVE THE ENVIRONMENTAL PERFORMANCE

Description:

Make proposals in the design of the product in order to improve its environmental performance

Specific objectives:

To analyze the environmental impact of the product and suggest improvements

Material:

Posted in ATENEA

Delivery:

Upload the document to ATENEA

15% of the final grade

Full-or-part-time: 25h

Laboratory classes: 10h

Self study: 15h

ENVIRONMENTAL COMMUNICATION

Description:

Define the best way to communicate the environmental improves of the product

Specific objectives:

Analyze the ecodesign communication tools in order to choose the best in each case

Material:

Posted in ATENEA

Delivery:

Upload the document to ATENEA

15% of the final grade

Full-or-part-time: 23h

Laboratory classes: 8h

Self study: 15h

PROJECT PRESENTATION

Description:

Present to the rest of the class the ecodesigned product and how the product has been improved

Specific objectives:

Make an oral presentation

Present the team's project to the entire class

Material:

Posted in ATENEA

Delivery:

Upload a document to ATENEA with the oral presentation

20% of the final grade

Full-or-part-time: 14h

Laboratory classes: 6h

Self study: 8h

GRADING SYSTEM

- Test: 15%
- Workshops: 10%
- Project deliverable 1 and 2: 10%
- Project deliverable 3 to 5: 45%
- Project presentation: 20%

EXAMINATION RULES.

Students must do all the activities in order to obtain a continuous assessment

RESOURCES

Other resources:

(1) Guinée JB. Handbook on life cycle assessment. Dordrecht etc.: Kluwer Academic Publishers; 2002.

(2) Hendrickson CT. Environmental life cycle assessment of goods and services :an input-output approach. Washington, D.C.:

Resources for the Future; 2006.

(3) Finnveden G, Hauschild M, Ekvall T, Guinee J, Heijungs R, Hellweg S, et al. Recent developments in Life Cycle Assessment. J Environ Manage 2009;91(1):1-21.

(4) Heijungs R, Huppes G, Guinee J. Life cycle assessment and sustainability analysis of products, materials and technologies. Toward a scientific framework for sustainability life cycle analysis. Polymer degradation and stability 2010;95(3):422-428.

(5) International Standard Organisation. ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework. 2006.

(6) International Standard Organisation. ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines. 2006.

(7) Joint Research Center, Institute for environment and sustainability. International reference Life Cycle Data System (ILCD) Handbook - General guide for Life Cycle Assessment - Detailed guidance. 1st ed. Luxembourg: Publications Office of the European Commission; 2010.