BACHELOR'S DEGREE IN INDUSTRIAL DESIGN ENGINEERING

SYLLABUS
SUSTAINABILITY AND REGENERATION

ACADEMIC YEAR: 2026-27
GRADE: 3rd / 4th
SUBJECT TYPE: Elective
SEMESTER: 2nd
ECTS: 6
TEACHING HOURS: 45
AUTONOMOUS WORKING HOURS: 105
TOTAL HOURS: 150
LANGUAGE/S: Spanish/Catalan
CODE: 17065

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PRESENTATION OF SUBJECT / OBJECTIVES

This subject incorporates the discussion of sustainable products, services and systems: resources, economic and social. As well as the discussion on regeneration models in the primary sector, focused on the extraction of resources for the manufacture of sustainable products: decision-making in the design phase (ecodesign).
An introduction to current legislation on sustainable design and regeneration is being worked on: regulations, standards and certificates.
In addition, it aims for students to acquire knowledge of communication about sustainability in new business models. We seek to shape the figure of the sustainability technician in today's companies.
We will work on the topics of sustainable product design: analysis and selection of sustainable and/or regenerative resources (materials), analysis and selection of sustainable and/or regenerative industrial processes (life cycle). As well as in the methodology of sustainable product design. I work under a sustainable/regenerative product design challenge. Introduction to tools for sustainable/regenerative material design.

SUSTAINABLE DEVELOPMENT GOALS (SDGS)

This subject specifically incorporates the following SDG and its target:
- Goal 14: Life below water.
  - 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.
- Goal 15: Life on land
  - 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and the services they provide, in particular forests, wetlands, mountains and drylands, consistent with obligations under international agreements.
  - 15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounting.

In this subject, work will be done on one of these 2 SDGs and their targets, or on both, depending on the case study selected.

CONTENTS

Block I: Sustainability and regeneration.
1.1. Discussion on sustainable design: resources, economic and social.

1.2. Discussion on the regeneration system: regeneration model in the primary sector.
1.3. Current legislation on sustainability and regeneration.
1.4. Communication in sustainability and regeneration. New business models.
1.5. Case study: sustainability and product regeneration.

Block II: Sustainable and/or regenerative product design.
2.1. Analysis and selection of more sustainable and/or regenerative resources (materials)
2.2. Analysis and selection of more sustainable and/or regenerative industrial processes (life cycle analysis)
2.3. Sustainable and/or regenerative product and/or system design methodology.
2.4. Sustainable and/or regenerative product and/or system design challenge.

TEACHING METHODOLOGIES
- Work sessions with the whole group, class with the teacher. (PA)
- Work sessions in small groups with the teacher. (PB)
- Autonomous group work sessions. (PF)

COMPETENCIES
- The student must know how to apply their knowledge to their work or vocation in a professional way and to possess the competencies that are usually demonstrated through the elaboration and defence of arguments and the resolution of problems within their area of study. (CB2)
- So that students are able to transmit information, ideas, problems and solutions to both a specialized and non-specialized audience (CB4)
- Projecting the values of entrepreneurship and innovation in the exercise of the personal, academic and professional trajectory, through contact with different realities of practice and with motivation towards professional development. (T2)
- Showing skills for professional practice in multidisciplinary and complex environments, in coordination with networking teams, either in face-to-face or virtual environments, through the computer and informational use of ICTs. (T4)
- Using different forms of communication, both oral and written or audiovisual, in their own language and in foreign languages, with a high degree of correctness in use, form and content. (T6)
- Integrating the fundamentals of materials science and technology for the proper characterisation, selection, and application of the properties, mechanical structures, and manufacturing systems of materials. (E1)
- Using different methodologies and work tools to correctly design any product, system or service. (E6)
- Developing prototypes for experimentation, as well as formal and technical testing that allows the communication of the concept and the technical justification of the project. (E7)

LEARNING OUTCOMES
- Applying their knowledge to solve problems in complex or professional and specialized work environments that require the use of creative and innovative ideas.
- Communicating knowledge, methodology, ideas, problems and solutions to all types of audiences (specialized or not) in a clear and precise way.
- Solving problems and situations typical of professional performance with entrepreneurial and innovative attitudes.
- Designing interventions that meet the needs of the field in a multidisciplinary way.
- Preparing reports and written documents (mainly of a technical nature) in the field of management and data.
- Learning about the basics of advanced materials; as well as the technologies involved.

- Using different methodologies, and technological combinations with materials in the context of product, system or service design to offer an innovative and competent solution to a given problem.
- Developing and manufacturing prototypes for experimentation, characterization and communication of the result and technical aspects.
- For the students to know the current industrial reality and knowing how to communicate and interact with it in a professional environment.
- Identifying new emerging technologies in the field of materials and being able to abstract processes to include them in a project.

TRAINING ACTIVITIES

Each subject will present at the beginning of the course its WORK PLAN where the didactic activities per week / session / autonomous work are recorded.

EXAMINATION

EXAMINATION SYSTEMS

The evaluation of the subject will be based on continuous monitoring of the student's academic work throughout the course.

EVALUATION SYSTEM	FINAL WEIGHTING
P2-Follow-up of the work done	30
P3-Reports from the students themselves, External Tutors, Tribunal	10
P5-Completion of required work or projects	60

EXAMINATION CRITERIA

The final grade of the subject will be the weighted average of the grades of the assessable activities according to the following table:

ASSESSABLE ACTIVITY	WEIGHT	RECOVERABLE (up to 50%)	EVALUATION SYSTEM
Activity-1 Performing exercises and participating in class	30%	NO	P-2
Activity-2 Peer Discussion	10%	NO	P-3
Activity-3 Design Challenge Final Delivery	50%	YES*	P-5
Activity-4 Design Challenge Presentation	10%	NO	P-5

Students will have the option of retaking the retake tests. The retake tests will be carried out in the period of the semester allocated to this function, not being able to recover more than 50% of the subject.

* In the event that the Recoverable Assessable Activities exceed 50%, the student body may choose, up to a limit of 50%.

The unjustified non-submission of any assessable activity implies a grade of 0, even if the activity has been classified as Recoverable.

Recoverable Activities can only be recovered when they have been submitted by the student body on the indicated date and with a grade equal to or greater than 3.

If access to the retake test is waived, the grade achieved in the first instance will be maintained.

In case of taking the recovery, the grade obtained will be the last, even if it is lower than the first.

Plagiarism or copying of other people's work is penalised in all universities and, according to the Rules of Coexistence of the University of Vic-Central University of Catalonia, they constitute serious or very serious offences. That is why in the course of this subject any indication of plagiarism or misappropriation of texts or ideas other people (What is considered plagiarism?) as well as the

improper or undeclared use of Artificial Intelligence in an activity, automatically translates into a suspension and/or other disciplinary measures (Normes de Convivencia de la Universitat de Vic-Universitat Central de Catalunya).
For any questions or queries, see the (Academic Regulations of the Bachelor's Degree of the Faculty of Design and Engineering Elisava UVic-UCC).

BIBLIOGRAPHY AND TEACHING RESOURCES

- Thackara, John. 2015. *How to Thrive in the Next Economy Designing Tomorrow's World Today.* 1st ed. Thames & Hudson.
- Minney, Safia . 2022. *Regenerative Fashion A Nature-Based Perspective: Fibers, Livelihoods, and Leadership.* 1st ed. BLUME (Naturart).
- Honeyman, Ryan; Tiffany, Jana. 2019. *The B Corp Handbook: How to Use Business as a Force for Good.* UK professional business Management / Business
- European Commission. 2022. *Regulation of the European Parliament and of the Council: establishing a framework for the establishment of ecodesign requirements for sustainable products and repealing Directive 2009/125/EC.* Proposal for a Regulation on Ecodesign for Sustainable Products (europa.eu)

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