

Course guide

480USE017 - 480USE017 - Strategies for a Global and Just Transition

Last modified: 15/06/2026

Unit in charge: Barcelona School of Civil Engineering
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering.
710 - EEL - Department of Electronic Engineering.

Degree: MASTER'S DEGREE IN SUSTAINABILITY AND STRATEGIES FOR A JUST GLOBAL TRANSITION (Syllabus 2026). (Optional subject).

Academic year: 2026 **ECTS Credits:** 5.0 **Languages:** Spanish

LECTURER

Coordinating lecturer: Miren Etxeberria

Others: Sergi Sauri, Gemma Velez, Eva Vidal

TEACHING METHODOLOGY

MD.1. Active expository teaching (participatory lecture).
MD.4. Case studies.
MD.6. Inquiry-based learning.
MD.7. Project-based learning.

LEARNING OBJECTIVES OF THE SUBJECT

To understand the strategies related to the transition in the areas of: 1) public policy (topics 1, 2, and 3); 2) ICT and innovation (topics 4, 5 and 6); 3) sustainable construction (topics 7 and 8); and 4) transport and mobility (topics 9, 10, and 11).

By the end of the course, students will be able to critically evaluate current models of sustainable transition, considering their impacts on the four areas of focus: public policy, ICT and innovation, construction, and transport and mobility.

STUDY LOAD

Type	Hours	Percentage
Self study	80,0	63.95
Hours large group	22,7	18.15
Hours small group	11,0	8.79
Hours medium group	11,4	9.11

Total learning time: 125.1 h

CONTENTS

Topic 1. Analysis of public policies on economic, social, and environmental sustainability. Public procurement and social and environmental clauses

Description:

Concept of economic, social, and environmental sustainability. Objectives of public policies, from global to local (case studies). Equitable policies (Tobin tax, European taxes, tariffs). Social and environmental clauses in public procurement.

Related activities:

Analysis of specific policies at both the local (city) and global (EU) levels

Full-or-part-time: 4h

Theory classes: 2h

Practical classes: 1h

Laboratory classes: 1h

Topic 2. Introduction to public policy evaluation. Evaluation methodologies, case studies

Description:

Introduction to the IVALUA methodology for public policies. Cost-benefit analysis, multi-criteria analysis. Evaluation of cooperation policies

Related activities:

ACB and multi-criteria case analysis.

Full-or-part-time: 4h

Theory classes: 2h

Practical classes: 1h

Laboratory classes: 1h

Topic 3. Participation of social agents. Individual and collective behaviors. Institutional policy

Description:

The future of CSR (surveys and habits). Business stakeholders, unions, and lobbyists. Participation processes. Civil society and government. Decision-making

Related activities:

Analysis of specific participatory processes

Full-or-part-time: 3h 15m

Theory classes: 1h 25m

Practical classes: 0h 50m

Laboratory classes: 1h

Topic 4. The environmental paradox of ICTs: Footprint vs. Solution

Description:

Analysis of the duality of digital innovation in the transition. The negative impacts (the extractive economy of critical materials in the Global South, the increasing energy consumption of data centers, and the challenge of electronic waste) will be studied in contrast to its "enabling" potential for decarbonizing other sectors (Green IT). The focus will be on whether digitalization truly reduces the overall impact or generates a "rebound effect."

Related activities:

Analysis of the life cycle of an emerging technology and debate on the "hidden cost" of digitization.

Full-or-part-time: 4h

Theory classes: 2h

Practical classes: 1h

Laboratory classes: 1h

Topic 5. Digital Innovation for an Effective Transition

Description:

This study examines how ICT innovation acts as a catalyst for new sustainable models. It will explore how sensor technology (e.g., on a yacht) and data processing enable critical optimization of electrical grids (smart grids), urban logistics, and the circular economy (product traceability). The focus will be on understanding how technology allows a shift from linear models to optimized, real-time systems.

Related activities:

Case study on an innovation platform that facilitates community resource management or urban energy efficiency.

Full-or-part-time: 4h

Theory classes: 2h

Practical classes: 1h

Laboratory classes: 1h

Topic 6. Governance and Social Justice in the Digital Age

Description:

A reflection on the "just" dimension of the technological transition. The risks of digitalization will be addressed: the digital divide as a new form of exclusion, algorithmic bias, and data control. Strategies for democratic governance of technology, free software, and technological sovereignty will be explored as mechanisms to ensure that the transition leaves no one behind.

Related activities:

Reflection on ethics and equity in access to technology and in the management of citizen data.

Full-or-part-time: 3h 15m

Theory classes: 1h 25m

Practical classes: 0h 50m

Laboratory classes: 1h

Topic 7. Towards sustainable construction

Description:

The environmental impact of construction activity will be analyzed. This includes, on the one hand, the carbon footprint generated by construction itself, and on the other hand, the consumption of natural resources and the high volume of waste produced. However, the capacity of the construction industry to value this waste will also be examined. The analysis will focus on reducing the carbon footprint and include case studies of ecomaterials.

Related activities:

Reading of a scientific article, analysis of results. Class discussion

Full-or-part-time: 7h

Theory classes: 3h

Practical classes: 2h

Laboratory classes: 2h

Topic 8. Circular economy in construction

Description:

Although carbon footprint is currently the most widely used indicator for assessing the environmental impact of a material or process, reuse and recycling are essential for promoting a circular economy, preventing landfilling, and reducing the consumption of natural resources. This study will analyze demolition methods, material bank design systems, and the reuse of the resulting materials. It will also examine the most significant construction, demolition, and industrial wastes that are considered "resources" for the construction industry.

Related activities:

Experimental analysis activities and real-world cases

Full-or-part-time: 4h 15m

Theory classes: 2h 25m

Practical classes: 0h 50m

Laboratory classes: 1h

Topic 9. Transport and mobility in the globalized world

Description:

To provide a comprehensive overview of the current importance of freight transport and passenger mobility, both in economic terms and in terms of their environmental impacts. Among other aspects, discussions will cover urban mobility, maritime transport, and aviation, etc.

Related activities:

Real case studies

Full-or-part-time: 4h

Theory classes: 2h

Practical classes: 1h

Laboratory classes: 1h

Topic 10. Strategies for reducing the environmental impacts of transport

Description:

This paper will describe in detail the range of current measures to reduce the environmental impacts of transportation, including regulatory, technological, and business model redefinition aspects. It will also explain the main challenges currently facing the implementation of these measures.

Related activities:

The theoretical presentations will be accompanied by a practical case study applying one of these measures to introduce the various inherent problems of different natures during the implementation phase.

Full-or-part-time: 4h

Theory classes: 2h

Practical classes: 1h

Laboratory classes: 1h

Topic 11. Socioeconomic tools for assessing the impacts of transport

Description:

Introduce the main methodological tools for evaluating the impacts of transport, namely, cost-benefit analysis, integrated life cycle analysis, and the different methods for quantifying externalities.

Full-or-part-time: 3h 15m

Theory classes: 1h 25m

Practical classes: 0h 50m

Laboratory classes: 1h

GRADING SYSTEM

Any academic fraud, plagiarism or use or possession of unauthorised means in an assessment activity leads to a mark of zero (0) for the affected test or assignment. Furthermore, in accordance with the University's regulations, if disciplinary proceedings are initiated the subject is recorded as "Pending Assessment" until a decision is reached. These incidents are managed in accordance with the [Action Framework for Academic Integrity in Assessment at the UPC](#).

The course is divided into four parts. Each part accounts for 25% of the final grade.

- 1) Public Policy, 25%. (Part 1) Directed Activities (DA).
- 2) ICT and Innovation, 25%. (Part 2) Directed Activities (DA).
- 3) Sustainable Construction, 25%. (Part 3) Directed Activities (DA).
- 4) Transport and Mobility, 25%. (Part 4) Directed Activities (DA).

Final Grade (FG) = 0.25 Part 1 + 0.25 Part 2 + 0.25 Part 3 + 0.25 Part 4

EXAMINATION RULES.

There will be an assessment of directed activities (in-person or online) corresponding to the submission of the proposed assignments (AD type). These may be individual or group assignments, according to the criteria of each professor.

RESOURCES

Other resources:

Bibliography. Professors. Will be provided in each specific session.