Course: Social Cost-Benefit Analysis of Sustainable Energy Systemses credits: 10

Course code	SUVM24SCBA	**Modes of delivery**	Education
Name	Social Cost-Benefit Analysis of Sustainable Energy Systemses	**Assessments**	Social Cost-Benefit Analysis of Sustaina - Assignment
Study year	2025-2026		
ECTS credits	10		
Language	English		
Coordinator	J. Bekkering		

Learning outcomes

Objective of the Module:

After completion of this module, the student is competent in:

1. Create a potential (future) sustainable energy system with the integration of emerging, innovative energy (conversion) technologies, e.g. power-to-hydrogen
2. Quantitatively apply techno-economic renewable energy technology properties and behaviour
3. Evaluate the effects of the design choices on sustainability (definitions, requirements, energy efficiency and/or greenhouse gas emission savings)
4. Understanding the potential and challenges, e.g. smart grids, reliability, of (future) energy systems
5. (quantitatively) integrating stakeholders' interests
6. Apply a social cost-benefit analysis, incl. quantified and monetised effects and sensitivity analysis
7. Evaluate a social cost-benefit analysis by critical reflection and effective communication

Content

Content of the module:

In this module the student will expand his/her knowledge of (renewable) energy technologies, and the costs and benefits of their integration in energy systems. The focus will be on innovations in energy conversion technologies, and their implementation in stationary and mobile applications. This will enable the student to further develop knowledge, understanding, and systemic vision of the application of these technologies in energy system design. Also, the sustainability and reliability of future (renewable) energy systems are discussed.
This module is a continuation of the core modules Technologies, Plants and Integration at Different Scales, and Energy Policy, Markets, Finance, and Law. It places the core modules within a broader context. I.e., a systemic view on the interaction between energy carriers in the form of electrons and molecules is discussed, and business case development is expanded to social cost-benefit analysis in a case study. Students will study ways to transform the current energy system into one that is sustainable, without jeopardising the reliability and affordability of energy.

Included in programme(s)

European Master in Sustainable Energy System Management

School(s)

Institute of Engineering

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