

Course: Energy Infrastructures and Renewables

credits: 5

Course code	SUVH15IR	Modes of delivery	Teaching method 1
Name	Energy Infrastructures and Renewables	Assessments	Energy Infrastructures and Renewables - Assignment
Study year	2022-2023		
ECTS credits	5		
Language	English		
Coordinator	J. Bekkering		

Learning outcomes

After completion of this module the student is able to:

- ☐ explain the operation of the energy system and the effects of energy transition
 - ☐ explain the potential and challenges of (future) energy systems
 - ☐ foresee changes and bottlenecks that may occur due to the limitations of energy infrastructure
 - ☐ optimize the energy system with respect to infrastructure and renewable energy production; to enable further penetration of renewable energy sources while maintaining reliability and minimizing societal costs.
 - ☐ deal with risks, risk assessment and risk mitigation
 - ☐ explain the role of stakeholders in energy systems
- has demonstrated knowledge and understanding of:
- ☐ infrastructures
 - ☐ renewable energy challenges
 - ☐ smart grids
 - ☐ governance
 - ☐ sustainability aspects of energy systems (energy efficiency, greenhouse gas reduction)

Content

In this module the student will expand his/her knowledge of the fundamentals of (renewable) energy technologies. This will enable the student to develop basic knowledge and systemic vision of the application of these technologies in energy system design. The governance and sustainability of energy systems in a European context are also discussed. This module is a continuation of the core module Technologies, Plants and Integration at Different Scales (TPI), and places the core module within a broader context. I.e., the European energy system is explored, and a systemic view on the interaction between energy carriers, gas, electricity and heat networks is discussed. Students will study the interaction of various types of energies and the role of energy infrastructures to connect supply and demand. They will learn about potential barriers and how to make use of different possibilities to transform the current energy system into one that is much cleaner, without jeopardizing the reliability and affordability of energy.

Included in programme(s)

European Master in Sustainable Energy System Management

School(s)

Institute of Engineering