Course: Energy Systems Modelling & Applications — credits: 5

Course code	SUVM23ESMA
Name	Energy Systems Modelling & Applications
Study year	2026-2027
ECTS credits	5
Language	English
Coordinator	J. Bekkering
Modes of delivery	Teaching method 1
Assessments	Energy Systems Modelling & Applications - Assignment

Learning outcomes

After completion of this module the student is able to::

1. Understand simulation and optimisation models, the difference between these two and their applicability in energy systems modelling
2. Understand deterministic and stochastic energy system models, the difference between these two and their applicability
3. Apply sensitivity analyses and Monte Carlo techniques
4. Explain the potential strengths and weaknesses of energy system models and is able to interpret the results with a critical view

And is able to:

1. Create a techno-economic-environmental energy system model in a suitable modelling environment, and based on a supply and demand pattern

1. Present the outcomes of the model in a scientific format

Content

In this 5 ECTS module the student will expand his/her knowledge of modelling (renewable) energy systems. The difference between simulation and optimisation, and deterministic and probabilistic models, are discussed, with typical applications. Sensitivity analysis and Monte Carlo techniques are explained and applied. A real life renewable energy system is modelled and optimised in an applicable modelling software environment. Modelling is done from a techno-economic-environmental perspective.

Included in programme(s)

European Master in Sustainable Energy System Management

School(s)

Engineering, Life Sciences & ICT

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