Vak: Energy Technical Foundation — credits: 5

Vakcode	RWVM26ETF
Naam	Energy Technical Foundation
Studiejaar	2026-2027
ECTS credits	5
Taal	Engels
Coördinator	A.A. Bellekom
Werkvormen	Onderwijs
Toetsen	Data analysis assignment - Verslag Theory ETF - Schriftelijk, organisatie ToetsCentrum

Leeruitkomsten

Objective of the module:

At the completion of this topic the students understand the basics of

1. Analyse basic problems that involve energy/heat transfer, thermodynamics and fluid mechanics
2. Simplify and analyse basic (three-phase) electric circuits
3. Calculate electric power components
4. Discuss characteristics of the electricity supply system
5. Select and apply appropriate numerical and statistical modelling approaches and techniques, focussed on optimization, in a commonly used programming language
6. Assess the validity and reliability of research results (model, theory, data quality...), and discuss possible limitations

Inhoud

The technical foundation module consists of two separate courses.

1. Energy Basics/ Electrical Engineering (3EC)

In the first weeks of the semester students refresh their knowledge of the fundamentals of energy and power, heat transfer, thermodynamics and fluid mechanics. Attention is paid to the fundamental aspects of electrical engineering. Among others, these aspects comprise matters like circuit analysis, electric power calculations, three phase systems and electricity supply. This course serves as an introduction to the technical modules.

2. Numerical Modelling (2 EC)

In this course, the students are provided with an overview of different numerical methods that can be applied in the context of integrated energy systems. Specifically, data analysis methods, iterative and optimization methods will be discussed. For each of these methods the relevant properties will be studied. This information will allow the students to select appropriate methods to solve numerical problems based on the requirements dictated by the research context. An introduction to MATLAB and programming is also provided within this course.

Opgenomen in opleiding(en)

European Master in Renewable Energy

School(s)

Engineering, Life Sciences & ICT

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