Hanze University of Applied Sciences Groningen

Course: Energy Technical Foundation — credits: 5

Course code	ZWVH18ETF
Name	Energy Technical Foundation
Study year	2022-2023
ECTS credits	5
Language	English
Coordinator	A.A. Bellekom
Modes of delivery	Lecture
Assessments	Assignment Numerical Modelling - Report Theory Electrical Engineering + Energy B - Written, organised by STAD examinations

Learning outcomes

At the completion of this topic the student understands the basics of

- *heat transfer*
- *thermodynamics*
- *fluid mechanics*
- *electric circuit analysis*
- *electric power*
- *three phase systems*
- *electricity supply*
- *numerical modelling*

Content

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.

Included in programme(s)

European Master in Renewable Energy

School(s)

Institute of Engineering