Hanze University of Applied Sciences Groningen

Course: Physics and Fuels — credits: 5

Course code	ZWVH19PAF
Name	Physics and Fuels
Study year	2022-2023
ECTS credits	5
Language	English
Coordinator	J. Bekkering
Modes of delivery	Teaching method 1
Assessments	Lab - Assignment Theory - Assignment

Learning outcomes

Objective of the module / skills:

By completing the module the student demonstrates knowledge and understanding of:

E2.1.c.1 states and state transfer
E2.1.c.2 combustion, heat transfer and fluid mechanics
E2.2.a.1 gaseous energy carriers: hydrogen, biogas, green gas, CNG, CBG
E2.2.a.2 liquid energy carriers: gas-to-liquid, ethanol, liquefied hydrogen, LNG
E2.2.c.1 storage: parameters and technologies

And is able to:

E2.4.a.1 model processes for fuel production with a focus on downstream
E1.1.c.1 present an overview of the processes

Content

Theory (4 EC):

- ideal vs real gas, equations of state, compressibility
- heat transfer
- cryogenics (Joule-Thomson)
- combustion technology (incl. engines and emissions)
- fuels (properties/flow/storage)
- additives
- compression
- storage

Lab (1 EC):
Aspen Plus

Included in programme(s)

European Master in Renewable Energy

School(s)

Institute of Engineering