

Vak: Theory BioChemical Conversion ic Basics

credits: 3

Vakcode	ZVWH18BCC	Werkvormen	Werkvorm 1
Naam	Theory BioChemical Conversion ic Basics	Toetsen	Written Exam - Schriftelijk, organisatie tentamenbureau
Studiejaar	2020-2021		
ECTS credits	3		
Taal	Engels		
Coördinator	A. Perl		

Leeruitkomsten

To have demonstrated knowledge and understanding of

- Chemistry to calculate the thermodynamic outcome of various (bio-) chemical reactions.
- Distinguishing the many choices in biological conversion processes
- The practical challenges that influence availability and reliability of a plant
- Unit operations that are required for a given process

To be able to

- Make mass and energy balances in biological conversion processes
- Set up a biological conversion experiment (e.g. anaerobic digestion or photo bioreactors)
- Model a biofuel production plant and calculate energy conversion efficiencies
- Contribute to discussions with experts

Inhoud

Basic biochemistry

- Molecule concept (Basic chemistry)
- Thermodynamics (calculations on energy and work of chemical reactions)
- Metabolism: various metabolic processes related to biofuel production
- Photosynthesis: energy efficiencies and energy content
- Biomass: sources and availability, composition

Biochemical conversion technologies

- Types of biofuels (mainly bioethanol, biomethane, biodiesel)
- Conversion techniques, mainly the following 3, but other techniques/biofuels will be dealt with as well
 - Anaerobic digestion (biomethane)
 - Fermentation (bioethanol)
 - Transesterification (biodiesel)
- Pretreatment technologies (steps and implications)
- LCA (explanation and environmental impact/score different biofuels)
- Industry (description bioethanol power plant 1 and 2 generation feedstock Brazil)
- New (industrial) technologies in biofuel productions

Opgenomen in opleiding(en)

European Master in Renewable Energy

School(s)

Instituut voor Engineering