

## Vak: BioMass Energy

credits: 5

|                     |                |                   |                                      |
|---------------------|----------------|-------------------|--------------------------------------|
| <b>Vakcode</b>      | ZVWH18BME      | <b>Werkvormen</b> | Practicum / Training                 |
| <b>Naam</b>         | BioMass Energy |                   | Werkcollege                          |
| <b>Studiejaar</b>   | 2020-2021      | <b>Toetsen</b>    | Assignment BioMass Energy - Opdracht |
| <b>ECTS credits</b> | 5              |                   | BioMass Energy Theory - Computer,    |
| <b>Taal</b>         | Engels         |                   | organisatie tentamenbureau           |
| <b>Coördinator</b>  | C.B. Vogt      |                   |                                      |

### Leeruitkomsten

#### At the completion of this topic the students should know

The fundamentals of residual biomass and energy crops  
The fundamentals of biomass conversion processes and devices, with the emphasis on biological conversion processes, using bioreactors.

#### At the completion of this topic the students should be able to

Select appropriate methodologies from the range of different biomass energy technologies  
Processing of analytical results obtained during the a practical course on biogas production into a scientific report, drawing appropriate conclusions linked to scientific literature.

### Inhoud

With fossil fuel resources becoming limited, a possible alternative energy resource is the use of biomass. The module 'Biomass Energy' describes the various processes and techniques involved in conversion of the energy stored in biomass to other types of usable bio-energy. Present conversion techniques already show the ability to connect biofuels to the current infrastructure. However, the availability of biomass as well as the current conversion efficiencies of the various conversion techniques are not sufficient to replace fossil fuels.

Basic knowledge on chemical and biological conversion processes of biomass will lead to an integral approach, increasing the potentials for biomass in the fields of energy for the generation of renewable energy. The biomass conversion techniques described in the module 'Biomass Energy' might play just as an important role in the transition from fossil fuels to alternative energy sources as other fields of energy such as wind and solar energy. There is a special emphasis on the process of anaerobic digestion, producing biogas from various types of biomass. During the course various mathematical exercises will be done related to the yield of bioenergy by the various conversion techniques. This module contributes to the overall knowledge on renewable energy sources students acquire during the core of the MSc program.

The module 'Biomass Energy' also includes a practical course, in which the theoretical knowledge on anaerobic digestion will be applied in a lab experiment producing biogas in a bioreactor. General lab techniques will be combined with complex analytical measurements, resulting in various parameters on biogas production, which will be the basis of a scientific report written by the students.

### Opgenomen in opleiding(en)

European Master in Renewable Energy

### School(s)

Instituut voor Engineering