ENG-618

Biomass conversion

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Cursus	Sem.	Type
Energy		Opt.

Language of teaching	English
Credits	2
Session	
Exam	Project report
Workload	60h
Hours	**36**
Courses	20
TP	16
Number of positions	

Frequency

Every year

Remark

ONLINE COURSE. Next time October 2026

Summary

The learning outcomes are to get to know the biomass ressources and its characteristics; study of biomass conversion pathways and study of process flow-sheets; establish the flow diagram of an industrial process with biomass as feedstock and calculate the corresponding mass and energy balances; etc

Content

- Biomass classification and characterization aspects.
- Availability and potential of bioenergy in local and global scale.
- Biomass conversion pathways - current technology available and R&D status.
- Biological pathways - Thermochemical pathways.
- Main unit operations related with biomass conversion and biofuels production.
- Design of industrial processes with biomass as feedstock.
- Process integration applied to biomass conversion processes.
- Thermo - economic analysis of biomass conversion processes.
- Environmental impacts and life cycle analysis of biomass conversion processes.
- Principle of biorefineries.
- Application to one process case study.

Keywords

Biomass, biofuel, energy conversion, process design

Learning Prerequisites

Recommended courses

Thermodynamics, heat and mass transfer, unit operation, process design, process integration

Assessment methods

Project report evaluation

Resources

Moodle Link

- https://go.epfl.ch/ENG-618