

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
<b>Hours</b>	<b>36</b>
Lecture	20
Practical work	16
<b>Number of positions</b>	

**Frequency**

Every year

**Remark**

Next time: November 27th to December 1st, 2023

**Summary**

The learning outcomes are to get to know the biomass resources 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>