



5.00 credits

30.0 h + 30.0 h

Q1

Teacher(s)	Gerin Patrick ;Jeanmart Hervé ;
Language :	English
Place of the course	Louvain-la-Neuve
Main themes	<ul style="list-style-type: none"> • Origin and composition of the biomass • Physico-chemical characterisation of biomass • Thermo-chemical conversion (pyrolysis, combustion, gasification) • Bio-chemical conversion (fermentation)
Learning outcomes	<p>At the end of this learning unit, the student is able to :</p> <p>In consideration of the reference table AA of the program "Masters degree in Mechanical Engineering", this course contributes to the development, to the acquisition and to the evaluation of the following experiences of learning:</p> <ul style="list-style-type: none"> • AA1.1, AA1.2, AA1.3 • AA2.3, AA2.4, AA2.5 • AA3.1, AA3.3 • AA5.1, AA5.2, AA5.3 1 • AA6.1, AA6.3 <p>At the end of the course, the student should</p> <ul style="list-style-type: none"> • be able to characterize a biomass feedstock and evaluate the potential of a biomass source; • be able to describe, illustrate and compare the different biomass conversion routes; • be able, given a biomass source and an application, to select technically the best conversion route. • be able to design a facility based on detailed specifications • be able to start a PhD in the field of biomass energy.
Evaluation methods	<p>The evaluation is based on a weighted average of the different activities:</p> <ul style="list-style-type: none"> - an oral examination with or without written preparation with the different course teachers. - projects and assignments carried out during the year. <p>As projects cannot be organised outside the course period (first semester), the mark acquired during the semester will be final for all sessions (Article 77 of the RGEE).</p> <p>The weighting is announced to the students at the beginning of the semester.</p>
Teaching methods	<p>The course is based on lectures given by the two professors and on applications given to the students if the form of homeworks. The course content is updated yearly following the research progresses made by both teachers in their respective fields and by the scientific community.</p> <p>Several industrial visits and labs are also organised for the students to illustrate the theoretical content of the course.</p>
Content	<p>This is an advanced optional course. It is focused on the study of the different biomass conversion routes for energy purposes. It is split into two parts. One is dealing with the thermo-chemical conversions: pyrolysis, combustion and gasification. The other one is devoted to the bio-chemical conversion routes: ethanologenic fermentation and methanogenic fermentation. The production of biodiesel from oily biomass is not addressed.</p>
Inline resources	http://moodleucl.uclouvain.be/enrol/index.php?id=7878
Other infos	<p>This course is open to student following a master in engineering or bio-engineering.</p>
Faculty or entity in charge	MECA

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Mechanical Engineering	MECA2M	5		
Master [120] in Electro-mechanical Engineering	ELME2M	5		
Master [120] in Chemistry and Bioindustries	BIRC2M	5		