



5 credits

30.0 h + 30.0 h

Q1

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| 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) |
| Aims | <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. <p>-----</p> <p><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i></p> |
| Evaluation methods | The evaluation is based on the quality of the homeworks and on an oral discussion between the professors and the students. |
| 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 | 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. |
| Inline resources | http://moodleucl.uclouvain.be/enrol/index.php?id=7878 |
| Other infos | This course is open to student following a master in engineering or bio-engineering. |
| Faculty or entity in charge | MECA |

| Programmes containing this learning unit (UE) | | | | |
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| Program title | Acronym | Credits | Prerequisite | Aims |
| Master [120] in Electro-mechanical Engineering | ELME2M | 5 | |  |
| Master [120] in Mechanical Engineering | MECA2M | 5 | |  |