

## Syllabus – Elective Course

Course title:

**Current Practices in Renewable Energy**

Credits:

6 ECTS credits

Teaching language:

English

Target students:

Undergraduate students from all study areas with an interest in the social, economic, environmental, theoretical, and technological background of renewable energy generation

Teacher in charge of the course:

Prof Nicolas Waldhoff, *Hautes Etudes d'Ingénieurs, Université Catholique de Lille*

### **COURSE PRESENTATION**

Prerequisite:

Students undertaking this course should normally have successfully completed at least one semester at university, or have equivalent experience. They must have some ability to work as a group and be able to communicate easily in English at a standard university level. In other respects, the course is intended to serve a mix of profiles and learning backgrounds for a more diverse international learning experience.

Content:

The course topics will be organised as follows :

- 1) Introduction
- 2) Background information
- 3) History
- 4) Key figures
- 5) Solar Energy
- 6) Wind Power
- 7) Hydropower
- 8) Biomass
- 9) Energy Storage

+ 1 installation sizing using 1 or 2 types of software heavily used in the industry (PVSYST & Homer)

+ Group work on a new technological advance in renewable energy

+ 4 company visits are included :

- The company Gecco is expert in the recovery of biofuel catering waste in Avelin:  
<https://www.gecco.fr/#>
- The Centre for Development of Renewable Energies in Loos en Gohelle:  
<http://www.cd2e.com/>
- The Centre for Waste Management “centre de valorisation organique” in Sequedin :  
[https://fr.wikipedia.org/wiki/Centre\\_de\\_valorisation\\_organique\\_de\\_Sequedin](https://fr.wikipedia.org/wiki/Centre_de_valorisation_organique_de_Sequedin)
- The company ELISE in Wambrechies ,Recycling and destruction of office papers :  
<https://www.elise.com.fr/>

### Learning Outcomes:

At the end of the course, the students should be able to:

- List and generally explain the main sources of energy and their primary applications in the world.
- Describe the challenges and problems associated with the use of various energy sources, including fossil fuels, with regard to future supply and the environment.
- Describe/illustrate basic scientific/technological concepts of the main renewable energy generation techniques such as solar, biomass, hydro and wind.
- Successfully propose a technically/economically sound methodology to generate renewable energy for underdeveloped countries.
- Work in a team setting project.
- Describe the operation of several renewable energy generation sites in France.

### **WORKLOAD**

*French contact hours = 60 minutes (in some countries/institutions, 1 contact hour = 45-50 minutes)*

<b>Form:</b>	<b>Number of hours</b>	<b>Comments</b>
Face-to-face, in-class, on-site learning	<b>39 hours</b>	13 sessions of 3 hours + 1 session to prepare the final project
Additional field trips		
Approximate personal work / homework	15 hours	
Student total workload	53 hours	

### **EDUCATIONAL METHODS**

Lectures, fieldtrips, share of experiences, debate, case-studies, group work.

### **RESOURCES**

All course materials will be supplied in class. References may be made to the following resources:

- *Renewable Energy: Power for a Sustainable Future*, edited by GODFREY BOYLE, Oxford Edition
- *Renewable Energy: A First Course*, Robert Ehrlich, CRC Press, Taylor & Francis Group, Boca Raton London New York

- *Introduction to Renewable Energy (Energy and the Environment)* 1st Edition by Vaughn C. Nelson, CRC Press
- *RETSCREEN*: Natural Resources Canada

#### ASSESSMENT

Form	Number	Duration	Comments
<b>Continuous assessment</b> (20%)			Multiple choice questionnaires
<b>Final exam</b> (60%)			Report/Defense
<b>Others (student participation...)</b> (20%)			Attendance, participation, and contribution to group discussion

*This syllabus is based on information available at the time of publication (November 2019). Changes may occur. For updated information about course content, please contact us: [lilleprograms@univ-catholille.fr](mailto:lilleprograms@univ-catholille.fr)*