



ENVI3007 Renewable energies

[30h] 4 credits

This course is taught in the 1st semester

Teacher(s): André De Herde, Patrick Gerin (coord.), Jean-François Ledent
Language: French
Level: Third cycle

Aims

Knowledge:

- Introduction to the various sources of renewable energy
- Knowledge of the theoretical background on which are based the main technologies for the conversion and valorisation of renewable energy sources.

Know-how and skills:

- Capacity to seek, understand, analyse, synthesise and assess quantitatively scientific and technical data relative to one renewable energy conversion technology.
- Capacity to write a short structured and critical report synthesising the state of the art in the selected subject of renewable energy; capacity to communicate orally this review.

Main themes

The course aims at providing the students with a broad, diversified and multidisciplinary background on renewable energy. It gives a global view of the various renewable energy sources and uses, with emphasis on the available resources, conversion technologies, environmental impacts, and socio-economical aspects of their development.

Content and teaching methods

The course is based on lectures given by researchers or industrial actors involved in specific aspects of the renewable energy sector. The course content will focus on:

Renewable energy: world energy context, global view

Solar, hydraulic, wind energies: background, climatic architecture, thermal and photovoltaic conversion of solar energy, wind and hydraulic energies.

Energy from biomass: background, photosynthesis, energy crops, thermochemical and biological conversions, biofuels, life cycle assessment.

Green certificates: tools to support renewable electricity production

The evaluation will be based on a personal critical review of bibliographic data, to be presented orally and in a written report.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Precursory courses: Some introduction to thermodynamics

Evaluation: Oral presentation and written report on the subject selected by the student

Teaching team: Professors, researchers and industrial actors involved in specific aspects of the renewable energy sector

Miscellaneous

Other credits in programs

ARCH23	Troisième année du programme conduisant au grade d'ingénieur civil architecte	(4 credits)	
ELME22/E	Deuxième année du programme conduisant au grade d'ingénieur civil électro-mécanicien (énergie)	(3 credits)	
ELME23/E	Troisième année du programme conduisant au grade d'ingénieur civil électro-mécanicien (énergie)	(3 credits)	
ENVI3DS/1	Diplôme d'études spécialisées en science et gestion de l'environnement (Industrie et environnement)		Mandatory
ENVI3DS/4	Diplôme d'études spécialisées en science et gestion de l'environnement (Administration publique, environnement)		Mandatory
INCH22	Deuxième année du programme conduisant au grade d'ingénieur civil chimiste	(4 credits)	
INCH23	Troisième année du programme conduisant au grade d'ingénieur civil chimiste	(3 credits)	
MATR23	Troisième année du programme conduisant au grade d'ingénieur civil en science des matériaux	(4 credits)	
MECA22	Deuxième année du programme conduisant au grade d'ingénieur civil mécanicien	(3 credits)	
MECA23	Troisième année du programme conduisant au grade d'ingénieur civil mécanicien	(3 credits)	