

Renewable and non-Renewable Energies

Code: 102851
ECTS Credits: 6

Degree	Type	Year	Semester
2501915 Environmental Sciences	OT	4	0

Contact

Name: Daniel Campos Moreno
Email: Daniel.Campos@uab.cat

Use of languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers

Raquel Montes Martinez
Jordi García Orellana
Félix Sacristán Solano

Prerequisites

There are several subjects that the student should have passed before joining the present course. So that, it would be advisory to pass previously:

- Physics (1r year)
- Chemistry (1r year)
- Geology (1r year)
- Physics of Radiations and Matter (2n year)
- Introduction to Environmental Engineering (3r year)

It is also interesting (but not necessary) that students joining this course join also the optative course "Energy and Society", since both courses are complementary (one is focused on the social aspects of energy, while the present one is focused on more technical aspects).

Objectives and Contextualisation

The aims of the present course are:

- To acquire a general knowledge on the present state of energy problems at a planetary scale
- To acquire scientific knowledge and critical thought about different the different energetic sources available at present and about the present models of energy management
- To be able to quantify environmental problems related to energy management

- To know the different methods of extracting fossil fuels and the environmental implications they have.
- To know the physical and chemical processes behind energy extraction from fossil fuels.
- To identify the basic processes associated to energy generation in nuclear plants and the treatment of nuclear waste.
- To have a basic knowledge about environmental implications of energetic crops.
- To identify main renewable sources of energy available on the planet and the chemical/physical processes related to their exploitation.
- To identify the main elements and technical aspects related to projects, plants and facilities for the use of renewable energies.

Content

These are the main topics to be developed during the course:

1. The global energy problems. Models of energy management.
2. Fossil fuels
3. Nuclear energy
4. Nuclear accidents and nuclear waste
5. Bioenergy
6. Biomass and energetic crops
7. Geothermal energy
8. Generation of electricity. Electric markets.
9. Hydroelectric energy
10. Eolic energy
11. Solar thermal energy
12. Solar photovoltaic energy
13. Energy storage