Information about the Module 2 of the course: "Photovoltaic Energy"

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Aim: Photovoltaic technology has major advantages to become a key technology for a sustainable and balanced development in rural areas. Photovoltaic technology allows great flexibility and modularity when performing power generation installations which can allow the progress towards a distributed energy model. This photovoltaic module aims to provide students with the main technical and specific knowledge of the solar photovoltaic technology for its application in the rural environment development. In order to do this, the first three subchapters will develop the technical, economic, and social and environmental impact to be considered for the application of the photovoltaic technology in rural areas.

Parts:

- Chapter 1: Technical aspects
  - 1.1. Principles concerning the use of photovoltaic energy. Conditions for efficient exploitation.
  - 1.2. Technical alternatives and installation types for photovoltaic installations applicable for rural development.
  - 1.3. Calculations and design.
- Chapter 2: Economical aspects
  - 2.1. Estimation cost of the investment.
  - 2.2. Other costs.
  - 2.3. Analysis of economic efficiency and profitability.
- Chapter 3: Social and environmental aspects of photovoltaic systems for rural development
  - 3.1. Environmental impact emissions and life cycle assessment of photovoltaic systems.
  - 3.2. Social and rural development impact.
  - 3.3. Vision for future. Ideas and new suggestions.
- Chapter 4: Fully developed case study of application of photovoltaics for rural development.
  - 4.1. Introduction and technical aspects of the case study.
  - 4.2. Economical aspects of the case study.
  - 4.3. Environmental, social and rural development impact of the case study.
- Chapter 5: Proposed case studies
  - 5.1. Case Study 1.
  - 5.2. Case Study 2.
  - 5.3. Case Study 3.
  - 5.4. Case Study 4.
  - 5.5. Case Study 5.

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5.6. Case Study 6.
5.7. Case Study 7.
5.8. Case Study 8.
5.9. Case Study 9.
5.10. Case Study 10.

Description of the parts

In the second module, solar energy and photovoltaic systems are in the focus point. First of all we start by the technical introduction of existing photovoltaic systems, its characteristics; students learn the basics of designing and sizing. Afterwards the investment costs are estimated and the general knowledge of the photovoltaic market and price evolution is described. From an entrepreneurial point of view the profitability and feasibility of a photovoltaic project is a crucial question, while in the chapter 3 the environmental and social aspects are emphasized, also the entire life cycle of solar panels is analysed. At the end of the chapter we present some visions and suggestions for the future.

Chapter 4 demonstrates a case study called Mar de Fulles and analyzes it from the perspective of the learnt methodology in the first 3 chapters. The last chapter presents 10 case studies from Europe, offering the students the possibility to choose one of them and elaborate as a thesis.

Start here

After logging in, please download the text and get an overview of the module by reading the introducing summaries at the beginning of each subchapter. Like that, you can get a general idea of the content.

Forum

When you have finished a chapter, please go to the 'Forum' to see your Tutor's question connected to that chapter. As you are expected to participate in 80% of the discussions to complete the course, and because the material is divided into 5 chapters, you will have to participate in at least 4 forums.

If you have any questions regarding the material, you can ask them in the 'Questions and Answers'.

Online tutorial sessions

This is the official name of the chat. So if you need help to understand anything regarding the contents introduced in the documents, do not hesitate to write a message, and you will get a reply immediately.
Professors Jose Segarra and Zsuzsanna Kray will be on line attending your questions regarding the module. The exact days and hours are: 7th, 14th and 21st of April from 10:00 to 11:00 for spanish and hungarian students, one hour later for romanian students.

List of Acronyms

A list of acronyms has been uploaded in Chapter 6 of the module Moodle platform. Documents in this section will be available for you for permanent use. So, you will be able to look up any unknown acronym at any moment.

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How to learn the material and pass the modules?

After getting familiar with the module context and contents, read the texts one by one *carefully*, and work them.

Once you feel prepared, go to the questionnaire of the chapter (there are four tests in the module) and try to respond the test. It is a multi-response test with up to four different options in which only one of them is correct. The answers can be straight found in the text of the files provided in the module.

Assessment

Students can only obtain the certificate of the course (including the 4 modules) if the following conditions are fulfilled:

- They have obtained 60% of mark in all chapters of the 4 modules
- They participate in at least 80% of the debates proposed in the forums
- They have fully and individually developed a study case combining rural development (module 1) and one of the modules 2, 3 or 4, and this has a positive evaluation from the teachers involved.

    - The possible study cases to be developed will be presented to the students in Modules 2, 3 and 4. Students can also propose a potential study case to the teachers, and wait for their acceptance as case study.
    - Each study case will be supervised by the teachers teaching their corresponding module (2, 3, 4) and module 1 (for the part of rural development).
    - The study case will be developed by the students the last 3 weeks of June 2016.
    - The student will have to present to the corresponding teacher his work on the case study at the middle of those 3 weeks, so that the teacher can give guidelines and propose improvements to be implemented.

The result indicated on your certificate of the course "Renewable energy for local development" (that includes the 4 modules) will be based on the score you achieve:

0-59% Fail
60-69% Good
70-79% Very good
80-100% Excellent

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If you have technical difficulties with the learning platform, you can contact the course administrator, Mr Zoltán Futó at futozoltan@karolyrobert.hu.