

Information about the Module 4 of the course: “Wind Energy”

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Aim: Wind energy is among the forms of renewable energy that is suitable for small-scale applications. The small wind turbines are generating systems with an electricity production capacity of up to 50 kW. The isolated communities, which otherwise can only rely on diesel generators may use wind turbines to replace diesel generators. Individuals from rural areas can purchase these systems to reduce or eliminate their dependence on grid electricity for economic or other reasons. Wind turbines have been used to produce electricity for domestic use in particular by storing it in batteries in isolated areas.

Parts:

- Chapter 1: Technical aspects
 - 1.1. Principles concerning the use of wind energy. Conditions for efficient exploitation.
 - 1.2. Technical alternatives and installation types for wind 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 wind energy 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
- Chapter 6: Extra material

Description of the parts

The first three chapters of this module presents the historical data of wind energy use, the evolution in time of wind turbines, basic constructive configurations of turbines with the

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principal elements components, the conditions for efficient exploitation. After, are described steps for sizing a wind turbine installation for a dwelling from the rural area. In making the decision to install a wind turbine, the cost is a critical factor. It is therefore important to establish the price for the produced power, taking into account the specific prices for operating and maintenance. Some aspects of wind energy exploitation that influence on the environment are described. Finally, several issues related to wind energy prediction methods to determine wind duration and intensity are covered.

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. Also note that a Chapter 6 has been introduced in each module in which students will find interesting files with complementary information.

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.

Professor Roxana Grigore will attend with questions regarding chapter 1 in 26 may from 12:00 to 13:00 for Spanish and hungarian students, one hour later for Romanian students
Professor Gabriel Puiu will attend with questions regarding chapters 2 and 3 in 23 and 24 may from 12:00 to 13:00 for Spanish and Hungarian students, one hour later for Romanian students.

Professor Zsuzsanna Kray will attend with questions regarding chapters 4 and 5 in 25 may and 2nd of June from 12:00 to 13:00 for Spanish and Hungarian students, one hour later for Romanian students.

List of Acronyms

Given the big number of acronyms used in the documents presented in this first module, a list of acronyms list 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.

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. You can expand your knowledge or learning by following and reading the multiple links provided in the “references section” of the various documents. Also along the text, one can find links and images that can be tracked for further information. It is quite important to follow the original order of the material, because it has not been drawn up randomly.

Once you feel prepared, go to the questionnaire of the chapter (there are five 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. Most of the answers can be straight found in the text of the files provided in the module. However, some of them may need a light research through the links and sources of information cited in the documents.

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

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