## Module PRE600

### Renewable Energy Basics

This module is associated to the following degrees

Master > Renewable Energy Online > Mandatory Module

### Abstract:
This module consists of several self-studying courses called primers. The primers cover fundamental knowledge to succeed in the courses of the technology orientation from the fields of Mathematics, Thermodynamics, Fluids, Mechanics, Programming and Electrical Power Systems. Their aim is to provide the heterogeneous audience a common knowledge base especially in those fields which were not covered in the previous studies of the students.

For each of the primers, reading material is provided with the study content. This material is accompanied by a respective course on the learning platform where students can evaluate their progress using self-evaluation features, pose questions, discuss with class mates and mentors on a forum and submit mandatory assignments.

<table>
<thead>
<tr>
<th>Duration:</th>
<th>1 semester</th>
<th>Teaching form:</th>
<th>Self-learning (E-books)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle:</td>
<td>Winter Semester</td>
<td>Language:</td>
<td>English</td>
</tr>
<tr>
<td>Type of module:</td>
<td>Mandatory</td>
<td>Credit points:</td>
<td>6 ECTS</td>
</tr>
<tr>
<td>Level:</td>
<td>MM (master module)</td>
<td>Workload:</td>
<td>180 hours</td>
</tr>
<tr>
<td>Max. No. of students:</td>
<td>30</td>
<td>Pre-requisites:</td>
<td>none</td>
</tr>
<tr>
<td>Weblink:</td>
<td>n/a</td>
<td>Associated with the module(s):</td>
<td>n/a</td>
</tr>
<tr>
<td>Lecturer(s):</td>
<td>Robin Knecht, Paul Ziethe</td>
<td>Mentor(s):</td>
<td>Mónica Gutiérrez, Adnan Shihab</td>
</tr>
<tr>
<td>Designer(s) of the module:</td>
<td>Robin Knecht, Paul Ziethe</td>
<td>Examiner(s):</td>
<td>Robin Knecht, Paul Ziethe</td>
</tr>
</tbody>
</table>

### Objective of the module / learning outcomes:
After successful completion of the module students should be able to:

- identify fields where they are lacking competences
- self-organize their time and study methods for better results
- describe basic knowledge from a wide field of disciplines as required for renewable energies
- effectively use the features of the learning environment

### Forms of learning:
The learning process will be based on self-learning, i.e. reading material and online exercises in the form of self-tests as well as exercises which have to be submitted. During the self-learning process, the students will be supported by lecturers and mentors using forums, messages and video conferences on the online platform C3LLO to address questions and any type of difficulties.

### Helpful previous knowledge:

n/a
### Content of the module:
- Mathematics (Logic, Functions, Calculus, Coordinate Systems, Differential Equations, Stochastics)
- Fluids (Density, Pressure, Bernoulli Equation, Rayleigh-number, Principle of Connected Pipes, Measurement Principles, Pumps and Turbines)
- Mechanics (Forces, Momentum, Linear & Rotational Movement, Oscillations, Material Properties)
- Programming (Introduction to GNU Octave / MATLAB, Basic Programming, Modelling Fundamentals, Special Features)
- Electrical Power Systems (AC & DC Circuit Concepts and components, Balanced 3 phase AC circuits, Magnetic Circuits, Transformers, DC/Induction/Synchronous Machines)

### Useful literature:
Reading material for the respective courses

### Requirements for awarding the credit points
Practical exercises: Obtaining at least 50% of the points awarded for the assigned exercises on the learning environment.

### Examination periods:
During the lecture period.

### Comments:
none

### Registration procedure: | Last update: 03.08.2018
---|---
C3LLO |