

## Renewable Energy Systems (M. Eng.)

<b>Module – Number</b>		<b>872</b>		<b>Compulsory</b>	
<b>Name of Module</b>		<b>Introduction in Renewable Energy Systems</b>			
Person Responsible		Dr.-Ing. Pascal Leibbrandt			
Title of the Course		Introduction in Renewable Energy Systems			
Trial Identification					
Semester		Qualification semester			
Form of Course	Language	Lecture Series		English	
SWS/ ECTS/ Workload		4	5	150	
Formal Prerequisites		Only for graduates holding a Bachelor of Engineering degree			
<b>1. Contents and Qualification Objectives</b>					
<b>Contents:</b>					
Basics in combustion – <b>Part A</b>					
<ul style="list-style-type: none"> <li>• Thermodynamics of combustion</li> <li>• Chemical kinetics on combustion</li> <li>• Fundamentals of complete and incomplete combustion</li> </ul>					
<p>In addition, a lecture series - <b>Part B</b> - regarding actual questions from the engineering practice of renewable energy systems are presented. The lectures are based on the current research projects of the Nordhausen University of Applied Sciences and focus on the following topics (examples)</p> <ul style="list-style-type: none"> <li>• Modelling and simulation of complex technical processes</li> <li>• Optimization of energy converters</li> <li>• Energy system modelling</li> <li>• Supply concepts for buildings and quarters</li> <li>• Energy policy</li> <li>• CFD simulation</li> <li>• Test rig planning and data evaluation</li> </ul>					
<b>Learning goals:</b>					
The students are familiar with current scientific issues in the field of energy systems, photovoltaics, solar and geothermal energy, bioenergy or wind power. They know about methods and tools for the design and optimization of renewable energy systems and its components. They are familiar with the fundamentals of combustion.					
<b>2. Forms of Teaching</b>					
The module is a lecture series.					
<b>3. Prerequisites for Participating</b>					
none					
<b>4. Usability of the Module</b>					
This module is a compulsory module in the qualification semester for the Renewable Energy Systems (M. Eng.) Master's Programme.					
<b>5. Requirements for the Award of Credits</b>					
Students are required to pass the module examination, which encompasses all contents of the lecture series. Types of examination: written examination,					
<b>6. Credits and Grades</b>					
Module is assessed with a module examination credited with 5 credit points according to the ECTS (European Credit Transfer and Accumulation System).					
<b>7. Frequency of the Module</b>					
The module is offered for the qualification semester every winter semester.					
<b>8. Work Load</b>					
Participation in the course (45 h); preparation and follow-up (to the lectures) (60 h); Preparation for the examination (45 h)					
<b>The entire workload encompasses 150 hours, which corresponds to 5 ECTS credit points.</b>					
<b>9. Duration of Module</b>					
The module must be completed within one semester.					