**Blended Learning - Renewable Energy Master Course**
Tanja Behrendt, Larissa Krekeler, Michael Golba

**Introduction**
A new master course will be developed in Oldenburg especially for the needs of employed people who would like to pursue extra curriculum renewable energy studies. It will be realised within a blended learning concept - a mixture of online and face-to-face learning. This concept allows highly flexible learning, mainly independently of time and space. Depending on personal constraints and interests the course offers to the students a flexible choice of the sequence of modules time-wise and content wise. Overall the course will take 24 months (incl. master thesis) if studied full time and can be extended if studied part-time. The development of the complete course will be finished by 2017.

**Realising a highly flexible course structure**

Studying independently of space in time implies a flexible choice for the students in all dimensions. This requires a high share of electives and an individual support of the student in all dimensions by means of career coaching.

**Preparatory Mathematics Course**
Mathematics is one of the important knowledge required to study Renewable Energy. A pilot face-to-face mathematics course was developed and realised as preparation before PPRE and EUREC course starting in WS 2012/2013. An online version of this course will be available 2013. The content of the course was chosen depending on the requisites for the following master course and by evaluating the students knowledge in advance. Exercises were solved by the students and knowledge gaps were identified. The main difficulties occurred in Stochastics and Geometry. During the course Analysis, Stochastics, and Logic was taught. The number of participants increased.

**Exemplary Online Lecture Energy Meteorology**
The Energy Meteorology lecture will be an integral part of the Blended Learning Master Renewable Energy. During this course basic meteorological knowledge is taught which is necessary for the understanding of the fluctuating nature of solar and wind energy resources. Currently an online lecture Energy Meteorology is developed. The lecture will be tested in the winter term 12/13 parallel to the face-to-face PPRE-course. In this way a direct comparison of the online course to the face-to-face lecture will be made.

**Course structure**

- Preparatory Courses
- Compulsory Courses
- Electives
- Laboratory
- Project Work
- Internship
- Master Theses

To successfully start into the course a Preparatory Course will provide the opportunity to learn or refresh the basics required to study Renewable Energies. Within the Compulsory Courses an understanding of Renewable Energy Systems, Resources and Sustainability will be established and within the Electives fundamentals and advanced concepts of different technologies can be studied. Laboratory Courses will mainly be part of the face-to-face periods. There students can gain hands-on experience.

**Example of wind and solar energy share of electrical load in Germany**

**Project Partners**

ForWind

uniKassel

Oldenburg
Development of a Blended Learning Master Renewable Energy

Realising a flexible course structure

Tanja Behrendt
• MINTonline Project
• Postgraduate Programme Renewable Energy (PPRE)
• Demands for a Blended Learning Master
• Development of continuing study programmes (Master Courses, Certificate Courses)
• Non-traditional students

Project coordination:

Project partners:

Funding:

Project sponsor:
• 25 year face-to-face master programme (PPRE) and since 2004 European Master Renewable Energy (EUREC)
• 90 CP – 18 months, full-time
• More than 400 participants from more than 80 countries
Non-traditional students

• Students who like to pursue extra curriculum study
• Older – having different view on the course
• Practical experience
• Personal constraints and interests
Student’s view

Subject dimension

Course content

Individual curriculum vitae

Personal interests

Social dimension

Career possibilities

Temporal dimension
Realising a flexible course structure

- Subject dimension
  - Resources / Research Electives
  - Networking access
  - Regular cycles for Modules

- Temporal dimension
  - Blended Learning
  - Temporal dimension

- Social dimension
  - Access / Exposure

Flexible studying structure
Master Renewable Energy (120 CP)

- **Basic Courses (30 CP)**
  - Compulsory Courses (21 CP)
  - Electives (21 CP)
  - Laboratory (6 CP)
  - Case Study (6 CP)
  - Internship (6 CP)

- **Master Thesis (30 CP)**
Support of the students

Subject dimension

Flexible studying structure

Coaching / decision making

Preparation Courses

Social dimension

Networking

Individual curriculum vitae

Temporal dimension

Establish contacts
Demands for the programme

• Flexibility in all 3 dimensions (addressing specific challenges...)
• Individual support of the students
• Quality assurance – regular evaluation
THANK YOU!