pre326 - Wind Turbine Design, Electrical & Control Issues, Certification

Module label: Wind Turbine Design, Electrical & Control Issues, Certification
Module code: pre326
Credit points: 7.5 KP
Workload: 225 h

Used in course of study:
- Master's Programme European Master in Renewable Energy (EUREC) > Mastermodule

Skills to be acquired in this module:
- possess advanced knowledge on wind turbine design, electrical and control issues
- be skilled in Wind potential evaluation, Wind farm design and environmental impacts using simulation programs (GH WindFarmer), practical experience
- be skilled in performance testing and modelling of wind turbines

Module contents:
1. Electrical Conversion Systems
   - Synchronous and induction generators
   - Direct drive generators
   - Constant and variable speed systems
2. Wind turbines control
   - Aerodynamic power control (stall, pitch, yaw)
   - Electromagnetic torque control
   - Control – dynamic analysis and stability
   - Control strategies
3. Design of wind turbines
   - Important factors
   - Design options
   - Design parameters
   - Design of components
   - System design
   - Megawatt scale design
   - Offshore design
4. Performance Testing and Modelling
   - Measurements under controlled conditions
   - Field testing instrumentation
5. Measurements - anemometers - calibration
6. Electrical Integration
   - Weak grids
   - Power quality
   - Network costs and benefits
7. Large scale integration
   - Technical, economical and policy issues
   - Grid connection requirements, infrastructure
   - Economic aspects
8. Standards and Certification
   - WT certification
   - International standards

Reader's advisory:

Links:
Language of instruction: English
Duration (semesters): 1 Semester
Module frequency: jährlich
Module capacity: unlimited
Modulelevel: MM (Mastermodul / Master module)
Modulart: je nach Studiengang Pflicht oder Wahlpflicht
Lern-/Lehrform / Type of program: Workshop, Lectures, Laboratory, Tutorial

Examination
Time of examination
Type of examination

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<th>Course type</th>
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<td>Frequency</td>
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| Final exam of module | Exam week (end of May) | Written exam (3 hours) |