Hessen:ISU
International Summer University
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HESSEN

UNIKASSEL
VERSITÄT

Hessen: ISU Course Outline

ENVIRONMENTAL ENGINEERING AND RENEWABLE ENERGIES

CLASS HOURS: 20+tutorial

Lectures	**16 hours (credited)**
Tutorial	**2x2 hours (not credited)**
Field Trips	**4 hours (credited)**

PROFESSOR (Academic Director)

Prof. Dr. Stephan Theobald

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Lecturers:

- **Dr.-Ing. Klaus Träbing** is researcher and line manager at the department for Hydraulic Engineering and Water Resources Management at the University of Kassel
- **Prof. Dr.-Ing. Siegfried Heier,** former head of the Wind Power Engineering Department at Kassel University, expertise in the field of wind energy for more than 45 years, initiator and head of many national and international research projects concerning this field and has published more than 100 articles about generator systems, control and grid integration of wind energy

converters etc. and 17 books. He also published the standard works "Windkraftanlagen" (Springer) in German as well as "Grid Integration of Wind Energy" (Wiley) in English.

- **Dr.-Ing. Janybek Orozaliev** is head of department for Thermal Energy Systems at the Institute Decentralised Energy Technologies IdE in Kassel (a non-profit limited liability company under the joint sponsorship of the Kassel University, regional companies, the commercial and technological network deENet and the city of Kassel).
- **Prof. Dr.-Ing. Oliver Reul** is head of the department of Geotechnics at the University of Kassel

1)INFORMATION ON THE COURSE CONTENT

COURSE DESCRIPTION

The seminar is geared mainly towards students with a technical background, particularly the engineering sciences. This Environmental Engineering course focuses on the specific subject area Renewable Energies.
The class provides the opportunity to learn more about German and European perspectives on energy while covering topics such as wind energy, photovoltaic, geothermal technologies, hydropower and solar thermal technology.
Field trips demonstrate the real life environmental and economic impact of these new and promising technologies.

LEARNING OBJECTIVES

The interdisciplinary seminar is built around a series of lectures concerned with environmental engineering and renewable energies, delivered by professors from diverse disciplines. Students learn from and are inspired by leading academics working at the forefront of their fields. All lectures are additionally attended by tutors who supervise the students throughout the series. These tutors also accompany the students on field trips and help them prepare for the final exam.

COURSE MATERIALS

Introductory recommendation before the course starts*: The Global Status Report REN21- Renewable Energy Policy Network for the 21st century: http://www.ren21.net/ren21activities/globalstatusreport.aspx*

- All further material will be given during the course.

TENTATIVE CLASS SCHEDULE

Day	Topic	Structure and assignments	Lectures
1	Introduction – Tutorial: Potentials of Renewable Energy	Presentation Discussion Recommendations for post-course work to reinforce understanding	Tutors
2	Potentials and Techniques of Hydropower	Presentation / Discussion / Post-course work recommendations	Dr.-Ing. Klaus Träbing
3	Hydropower: Lab visit	Field trip, presentation, discussion	Dr.-Ing. Klaus Träbing
3	Excursion to Autarcon, Kassel: Company providing solutions for decentralized, energetically self sufficient drinking water treatment	Field trip, presentation, discussion	Experts on the spot
4	Solar Thermal Systems	Presentation / Discussion / Post-course work recommendations	Dr.-Ing. Janybek Orozaliev
5	Wind Energy: Development Plant Technology Grid Integration and Economy of Wind Energy Systems	Presentation / Discussion / Post-course work recommendations	Prof. Heier
7	Excursion: Wind Energy, Heating Systems in Pracise	Field trip	Experts on the spot
8	Geothermal Energy	Presentation / Discussion / Post-course work recommendations	Prof. Dr.-Ing. Oliver Reul

2)INFORMATION ON CLASS PARTICIPATION, ASSIGNMENTS AND EXAMS

ASSIGNMENTS

- Active participation in discussions and presentations, independent study

EXAMS

- Written exam

PROFESSIONALISM & CLASS PARTICIPATION

- Regular attendance in lectures and field trips

MISSED CLASSES

- No more than 10% of the contact hours can be missed for successful completion of the class.

3)INFORMATION ON GRADING AND ECTS

ACADEMIC STANDARDS

Upon successful completion, 3 ECTS will be awarded for the class.

According to the rules of ECTS, one credit is equivalent to 25-30 hours student workload.

GRADING SCALE:

Grade		*Description*
15 points	*1.0*	*very good: an outstanding achievement*
14 points		
13 points	*1.3*	
12 points	*1.7*	*good: an achievement substantially above average requirements*
11 points	*2.0*	
10 points	*2.3*	
9 points	*2.7*	*satisfactory: an achievement which corresponds to average requirements*
8 points	*3.0*	
7 points	*3.3*	
6 points	*3.7*	*sufficient: an achievement which barely meets the requirements*
5 points	*4.0*	
4 points	*5.0*	*not sufficient / failed: an achievement which does not meet the requirements*
3 points		
2 points		
1 point		
0 points		