

Hessen: ISU Course Outline

ENVIRONMENTAL ENGINEERING AND RENEWABLE ENERGIES

CLASS HOURS: 20+tutorial

Lectures	16 hours (credited)
Tutorial	2x2 hours (not credited)
Field Trips	2x1 hours (credited)

PROFESSOR (Academic Director)

Prof. Dr. Stephan Theobald

- *Office:* Kurt-Wolters-Straße 3; D-34125 Kassel - *Office hours:* by appointment
- *Email:* s.theobald@uni-kassel.de - *Phone:* +49 561 804-2679

Lecturers:

- **Dr. Karl-Heinz Simon** is Director of the Center for Environmental Systems Research at the University of Kassel
- **Dr.-Ing. Klaus Träbing** is researcher and line manager at the department for hydraulic engineering and water resources management at the University of Kassel

- **Dr. Stefan Bofinger** is researcher at the Fraunhofer Institute for Wind Energy and Energy System Technology IWES in Kassel. He is head of the department of inter-regional energy networks at IWES.
- **M Sc Sebastian Pfaffel** is researcher at the Fraunhofer Institute for Wind Energy and Energy System Technology IWES in Kassel. His main area of research is wind farms.
- **Prof. Dr. Klaus Vajen** is professor and head of the department Solar and Systems Engineering at Kassel University
- **Dipl.-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	Assignment due	Lectures
1	Introduction – Potentials of Renewable Energy	Presentation Discussion Recommendations for post-course work to reinforce understanding	Post-course work on the basis of course materials Preparation for the next session	Dr. Karl-Heinz Simon
2	Potentials and Techniques of Hydropower	Presentation / Discussion / Post-course work recommendations	Post-course work/ Preparation for next session	Prof. Dr. Theobald / Dr.-Ing. Klaus Träbing
3	Excursion to Autarcon, Kassel: Company providing solutions for decentralized, energetically self sufficient drinking water treatment	Field trip	Post-course work/ Preparation for next session	Experts on the spot
4	Photovoltaic	Presentation / Discussion / Post-course work recommendations	Post-course work/ Preparation for next session	Dr. Stefan Bofinger
5	Wind Energy	Presentation / Discussion / Post-course work recommendations	Post-course work/ Preparation for next session	M Sc Sebastian Pfaffel
6	Solar Thermal Technology	Presentation / Discussion / Post-course work recommendations	Post-course work/ Preparation for next session	Prof. Dr. Klaus Vajen / Dipl.-Ing. Janybek Orozaliev
7	excursion: Rothwesten: smart grids and electric mobility test centre; wind farm Wolfhagen / Rödeser Berg	Field trip		Experts on the spot
8	Geothermal Energy	Presentation / Discussion / Post-course work recommendations	Post-course work/ Preparation for the exam	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	<i>very good: an outstanding achievement</i>
14 points		
13 points	1.3	
12 points	1.7	<i>good: an achievement substantially above average requirements</i>
11 points	2.0	
10 points	2.3	
9 points	2.7	<i>satisfactory: an achievement which corresponds to average requirements</i>
8 points	3.0	
7 points	3.3	
6 points	3.7	<i>sufficient: an achievement which barely meets the requirements</i>
5 points	4.0	
4 points	5.0	<i>not sufficient / failed: an achievement which does not meet the requirements</i>
3 points		
2 points		
1 point		
0 points		

This course description was issued on: Januar 22, 2015. Program is subject to change.