



h_da

INTERNATIONAL SUMMER UNIVERSITY 2023

June 09 – July 01, 2023 in Darmstadt, Germany

Academic module: *6 ECTS credits

IN TRANSITION TO A PURE GREEN ENERGY ECONOMY

(including a 4-day academic excursion to Berlin)

Attend a German language course *3 ECTS credits

Enjoy a variety of social & cultural activities:

Excursions to Heidelberg and the Rhine River Valley, riding a solar draisine, high ropes course, Darmstadt city tour, h_da campus tour, hiking trip, trivia night, and many more fun activities!

Website: isu.h-da.de

Email: isu.int@h-da.de



Hessen:ISU
International Summer Universities
in Hessen, Germany



www.isu-hessen.de

Hessen International Summer University 2023 – Course Syllabus

<https://isu.h-da.de/>

In Transition to a Pure Green Energy Economy

ACADEMIC DIRECTORS

Professor Dr. Sebastian Herold (Hochschule Darmstadt)

Professor Kevin Taylor (Purdue University)

1) INFORMATION ON THE COURSE CONTENT

COURSE DESCRIPTION

The prospects of an energy system and a whole economy relying solely on renewable energy is the topic of the Hessen:ISU „In Transition to a Pure Green Energy Economy” at h_da Darmstadt University of Applied Sciences. It combines scientific knowledge taught in English with hands-on experiences during field trips to companies and public institutions. The International Summer University brings together technical and business perspectives and focuses especially on three challenges on the way towards a green energy economy:

1. **Transforming supply:** Technology as driver for real competitive renewable energies.
2. **Transforming demand:** Smart homes and smart cars for smart people.
3. **Transforming business:** Strategic impacts for business models.

Students will have the opportunity to establish **valuable contacts** for their future careers. To complement the classroom work, **company visits** and **excursions** to near and distant sights, cultural learning and many **leisure activities** outside the classroom are included in the program.

Due to the interdisciplinary approach of economic and technical aspects, the International Summer University appeals to students of economics and business administration as well as technical subjects.

LEARNING OBJECTIVES

A pure green energy economy

- Driving forces, ingredients and status quo
- International and national political aims
- Technological and economical transition pathways

Transforming supply

- Competitiveness of renewable energies and regimes of promoting them
- Potentials for different renewable technologies
- Challenges of an ever-increasing share of renewables for the energy system

Transforming demand

- Flexibilities of different consumer groups and demand side management as business case
- Smart grids, meters and devices: Redesigning the electric infrastructure
- Electric mobility as changing factor for the energy industry

Transforming business

- New players, new roles, new business models in the power industry

- The future of gas in a pure green energy economy
- The “prosumer” as new ideal of the energy system of the future?

COURSE MATERIALS

Slides and script on the online learning platform Moodle.

TENTATIVE CLASS SCHEDULE

<i>Date</i>	<i>Topic</i>	<i>Location</i>
May 20, 2023	Virtual Opening Ceremony	Online
May 26, 2023	(Online) Seminar: Towards a Pure Green Energy Economy Contexts, concepts and challenges	Online
June 2, 2023	(Online) Seminar: Renewable Energies – A Technological Perspective	Online
June 09, 2023	Arrival in Darmstadt	
June 10, 2023	Opening Ceremony in Darmstadt	Darmstadt
June 11, 2023	Intercultural Training	Darmstadt
June 12, 2023	Seminar: Integrating Renewables Into the Energy System	Darmstadt
June 13, 2023	Seminar: How do we want to live? Urban development and energy saving	Darmstadt
June 14, 2023	Transfer to Berlin	
June 15, 2023	Excursion Berlin: 1) German Parliament (tour & discussion) - confirmed 2) EUREF Campus - confirmed	Berlin
June 16, 2023	Excursion Berlin: 1) GreenTech Festival (conference & exhibition) – confirmed 2) Technology tour of the Olympic stadium - tbc	Berlin
June 17, 2023	Free time in Berlin	Berlin
June 18, 2023	Transfer to Darmstadt	
June 19, 2023	Seminar: Promoting renewable energies The German experience	Darmstadt
June 20, 2023	Seminar: Biogas, carbon capture & storage, hydrogen Options for gas in a pure green energy economy	Darmstadt
June 21, 2023	Excursion: Deutsche Bahn (tbc)	Frankfurt a. M.
June 22, 2023	Seminar: Consumers offering flexibility Demand side management for big industry and everyone’s home	Darmstadt

June 23, 2023	Excursion: Merck (tbc)	Darmstadt
June 24, 2023	Cultural Excursion: Heidelberg	Heidelberg
June 25, 2023	Cultural Excursion: Rudesheim (Rhine River Valley)	Rudesheim
June 26, 2023	Excursion: Lufthansa (tbc)	Frankfurt a. M.
June 27, 2023	Self-sufficient or delivering energy to neighbors Prosumers in the new energy system	Darmstadt
June 28, 2023	Seminar: How does it all fit together Sector coupling, costs and outlook	Darmstadt
June 29, 2023	Tutorial: Preparing final presentations	Darmstadt
June 30, 2023	Final Presentations & Closing Ceremony	Darmstadt
July 01, 2023	Departure	

ACADEMIC EXCURSIONS (subject to change)

- **EUREF-Campus, Berlin:** A real-world 'laboratory' for the energy revolution with over 150 companies and startups working on the campus area with its own, innovative and CO₂-neutral energy concept
- **German Parliament, Berlin:** Discussion about green energy with the member of parliament for the city of Darmstadt
- **GreenTech Festival, Berlin:** conference and exhibition on the topic of sustainable business ideas, products and strategies
- **Olympic Stadium Berlin:** Tour of the olympic stadium with a focus on energy management and sustainability at major events (tbc)
- **Merck, Darmstadt:** One of the globally leading pharmaceutical companies (tbc)
- **Lufthansa, Frankfurt:** German airline (tbc)
- **Deutsche Bahn:** German Railway (tbc)

2) INFORMATION ON CLASS PARTICIPATION, ASSIGNMENTS AND EXAMS

ASSIGNMENTS

Active participation and group work on a regular basis

EXAMS

Students will work in groups of three or four on one of the course's aspects and present their results at the end of the summer university. Each group can choose the topic of its project in consent with the lecturers during the first week and then continue its research during the summer university. Subsequent to each lesson, there will be time for the groups to work on the projects and to discuss findings with the lecturers. The examination takes place as combination of the presentation of the project-findings and their defense by all group members.

PRACTICE MATERIALS

Handouts, slides and additional literature.

PROFESSIONALISM & CLASS PARTICIPATION

Students are expected to attend the classes and dedicate 1-2 hours a day for their projects and the preparation of classes.

MISSED CLASSES

No more than 10% of the contact hours can be missed for successful completion of the course module. If students miss a lecture, it is their own responsibility to obtain information on the topics. In the event of sickness, a medical certificate must be presented to the International Summer University coordinator.

3) INFORMATION ON GRADING AND ECTS

ACADEMIC STANDARDS

Upon successful completion, 6 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

Percentage	Grade		Description
90-100%	15 points	1.0	very good: an outstanding achievement
	14 points		
	13 points	1.3	
80-90%	12 points	1.7	good: an achievement substantially above average requirements
	11 points	2.0	
	10 points	2.3	
70-80%	9 points	2.7	satisfactory: an achievement which corresponds to average requirements
	8 points	3.0	
	7 points	3.3	
60-70%	6 points	3.7	sufficient: an achievement which barely meets the requirements
	5 points	4.0	
0-60%	4 points	5.0	not sufficient / failed: an achievement which does not meet the requirements
	3 points		
	2 points		
	1 point		
	0 points		

This course description was issued/updated on January 20, 2023. The program is subject to change.