h_da

INTERNATIONAL SUMMER UNIVERSITY 2022

June 10 - July 02, 2022 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, retro games night, and many more fun activities!

Website: https://isu.h-da.de/
Email: isu.int@h-da.de

Hessen:ISU
International Summer Universities in Hessen, Germany
www.isu-hessen.de
HESSEN

ONLINE INFO SESSIONS

Learn more about the program, academic content of the module, planned excursions and cultural activities by attending one of our online info sessions. During the info sessions, you will have the opportunity to ask any question you might have about the program.

When? Thursday, Jan 27 at 8am and 9pm Central European Time

Tuesday, Feb 22 at 11am and 7pm Central European Time

Friday, Mar 11 at 7am and 11pm Central European Time

Where? https://h-da-de.zoom.us/j/92401234788

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HOCHSCHULE DARMSTADT
UNIVERSITY OF APPLIED SCIENCES

Hessen International Summer University Darmstadt 2022 – Course Outline

In Transition to a Pure Green Energy Economy

ACADEMIC DIRECTORS
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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 International Summer University **„In Transition to a Pure Green Energy Economy"** at 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, **excursions** to near and distant sights, cultural learning and many **leisure activities** outside the classroom are included in the program.

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?

Academic excursions

- **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
- **Vattenfall Power Plant, Berlin:** Location of the biggest power-to-heat complex in Germany
- **Siemensstadt, Berlin:** Berlin's district of the future
- **German Parliament:** Discussion about green energy with the member of parliament for the city of Darmstadt
- **Opel, Rüsselsheim:** Car manufacturer
- **Merck, Darmstadt:** One of the globally leading chemical and pharmaceutical companies
- **Fraport, Frankfurt:** German transport company which operates Frankfurt Airport

COURSE MATERIALS

Slides and script on the online learning platform Moodle.

TENTATIVE CLASS SCHEDULE

Date	*Topic*	*Type of Seminar*
May 23, 2022	**Virtual Opening Ceremony**	Online
May 30, 2022	**(Online) Seminar: Towards a Pure Green Energy Economy** Contexts, concepts and challenges	Online
June 6, 2022	**(Online) Seminar: Renewable Energies – A Technological Perspective**	Online
June 8, 2022	**(Online) Seminar: ISU meets h_da energy students – An introduction into the German electricity market**	Online
June 10, 2022	**Arrival in Darmstadt**	On-site (Darmstadt)
June 11, 2022	**Opening Ceremony in Darmstadt**	On-site (Darmstadt)
June 12, 2022	**Intercultural Training**	On-site (Darmstadt)
June 13, 2022	**Seminar: How do we want to live?** Urban development and energy saving	On-site (Darmstadt)
June 14, 2022	**Seminar: Integrating renewables into the energy system** Redesigning the electrical infrastructure	On-site (Darmstadt)
June 15, 2022	**Seminar: Consumers offering flexibility** Demand side management for big industry and everyone's home	On-site (Darmstadt)
June 16, 2022	**Excursion: Company visit Merck** Achieving climate neutrality as an industrial company	On-site (Darmstadt)
June 17, 2022	**Seminar: Promoting renewable energies** The German experience	On-site (Darmstadt)
June 20, 2022	**Excursion: Company visit Opel** eMobility and the future of the car industry	On-site (Rüsselsheim)
June 21, 2022	**Seminar: Biogas, carbon capture & storage, hydrogen** Options for gas in a pure green energy economy	On-site (Darmstadt)
June 23, 2022	**Excursion Berlin: Vattenfall & Siemensstadt**	On-site (Berlin)
June 24, 2022	**Excursion Berlin : German Parliament & EUREF Campus &**	On-site (Berlin)

	BDEW (Federal Association of the Energy and Water Industry)	
June 27, 2022	**Seminar: Self-sufficient or delivering energy to neighbors** Prosumers in the new energy system	On-site (Darmstadt)
June 28, 2022	**Excursion: Company visit Fraport AG** The environmental management system ISO 14001 in practice	On-site (Frankfurt)
June 29, 2022	**Seminar: How does it all fit together** Sector coupling, costs and outlook	On-site (Darmstadt)
June 30, 2022	**Final presentation**	On-site (Darmstadt)
July 01, 2022	**Closing Ceremony**	On-site (Darmstadt)
July 02, 2022	**Departure**	

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 on September 08, 2021. The program is subject to change.