



Technik  
Informatik & Medien

**Hochschule Ulm**



University of  
Applied Sciences

## International Semester Exchange Program

### Semester Program in Energy Economics (S P E E C)

Hochschule Ulm  
University of Applied Sciences

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# Contents

General Information.....	4
Application.....	4
Accommodation .....	4
Arrival in Ulm .....	5
How to get to Ulm.....	5
After you arrive.....	5
Exams .....	6
Money .....	7
Food .....	7
Dates .....	7
Some safety tips .....	7
Field trips .....	7
International Semester Program in Energy Economics (SPEEC) .....	8
Operations Research.....	10
Performance Management and Cost Accounting.....	12
Leadership and Business Communication.....	14
Analytics for Energy data .....	15
Energy Efficiency (Industrial Energy Concepts).....	17
Power Plant Technology (Introduction) .....	19
Energy Trading and Risk Management.....	21
Energy Data Management .....	23
Seminar in Energy Economics.....	25
Simulation.....	26
Project in Energy Economics.....	27
Germany within Europe .....	28
Germany within the last three centuries.....	30
Intercultural Communication.....	32
German language.....	34

## General Information

Academic Calendar	
Fall semester:	Spring semester:
Classes start: Beginning of October	Classes start: Beginning of March
Holidays: 2 weeks in Dec/Jan (Christmas)	Holidays: 2 weeks in May/June (Pentecost)
Exams: first 2 weeks of February	Exams: last 2 weeks of July

Orientation days	
Fall semester:	Spring semester:
Arrival: 1 <sup>st</sup> working day of September or 1 <sup>st</sup> working day of October	Arrival: 4 <sup>th</sup> March 2019
Orientation: Beginning of September / Beginning of October	Orientation: Beginning of March
Preparatory German intensive course: 2 Weeks in September	Preparatory German intensive course: 1 or 2 Weeks in March (depending on previous knowledge)

### Application

- Students have to be nominated by their home university  
The home university sends an e-mail with names & email-addresses to wagner@hs-ulm.de
- Students receive a link for the online-application

### Accommodation

Accommodations will be booked by the international office upon receipt of the housing request form. All students will stay in student residences, depending on availability. All rooms are single rooms. Kitchen and bathrooms are to be shared with other students (please note: in Germany accommodation is not separated by gender). Bed sheets etc. will be provided. There will be no equipment for cooking. We recommend to bring or to buy a small amount of personal kitchenware. Students may also borrow cooking equipment at Hochschule Ulm's international office.

Housing prices are between € 300 and € 400 per month. Students will be placed by the housing office (Studierendenwerk Ulm) on availability basis, unfortunately preferences cannot be considered. If you accept the room assigned, you have to sign the contract. A security deposit of € 300 must be made upon arrival. The money will be withdrawn from your German bank account which you will need to open during the first days of stay. We will assist you in doing so. The checking-in into the dorms is possible from Monday through Friday, 9.00 a.m. to 4.00 p.m.

Please note that check-in and check-out are only possible Monday-Friday. We will assign student tutors to assist you when checking-in. For check-out please make an appointment with the janitor in your dorm at least 10 days before you plan to leave in order to have your room inspected.

## Arrival in Ulm

Always on the first working day of the above mentioned month. Exemption for the spring semester: Please arrange your arrival on March 4<sup>th</sup> 2019. Students arrive at main train station Ulm, student tutors will pick them up and help to check-in into the dorms

Students should arrange arrival between 9:00 a.m. and 3:00 p.m.

## How to get to Ulm

For train connections you can check at [www.bahn.de](http://www.bahn.de).

### From Stuttgart Airport:

Take the underground (S-Bahn) S2 or S3 to Stuttgart main train station (Hauptbahnhof – Hbf). It will take you about 30 minutes. At the main train station take a train to Ulm. Trains leave to Ulm about every hour. It will take you about one hour to get to Ulm.

### From Munich Airport:

Take the underground to Munich main train station (Hauptbahnhof – Hbf). It will take you about 40 minutes. At the main train station take a train to Ulm. Trains leave to Ulm about every hour. It will take you about 1.20 hours to get to Ulm. Important: if you take IRE/RB/RE trains, be sure to get in the front part of the train since the train splits and only the front part goes to Ulm.

### From Frankfurt Airport:

There are direct trains to Ulm from Frankfurt Airport. Trains leave to Ulm about every hour. It will take you about 2.15 hours to get to Ulm.

### From Ulm main train station to Hochschule Ulm

If you give us a call we will send a student tutor to pick you up at the main train station. Otherwise take bus no. 7 to bus stop "Kliniken Michelsberg" and walk down the hill.

## After you arrive

Tutors will help you organizing your stay in Ulm. They will show you the university, the city and they will accompany you to the different offices.

The Activity fee for each student is € 90.50 (subject to change). Students are allowed to take the city buses in Ulm every evening after 6 p.m. and on Saturdays, Sundays and public holidays free of charge by showing their Student ID card.

All European students please bring your EHIC-Card!

If you stay more than 3 months in Germany you have to go to the registration office in Ulm or Neu-Ulm and register in Germany. Student tutors will help you in filling out the needed forms and will accompany you to the registration office.

Within the first 2 weeks of your stay you will be provided with an e-mail account at Hochschule Ulm. The computer rooms are open from Monday through Friday from 7.30 a.m. until 8 p.m. and on Friday from 7.30 a.m. until 7 p.m.

## Exams

In case a student fails a course, i.e. is awarded a grade of 4.7 or worse, a re-examination may be done within 2 weeks after the announcement of the exam results. The examiner decides both the date and the form of the re-examination.

For conducting the re-examination the candidate has to be present in person. The exam may not be taken at the home university.

## Some more useful information

### For the Fall Term

We recommend bringing winter clothes and also proper clothes for rainy days. In Ulm we face temperatures between 10° Celsius and minus 10° Celsius in the winter. The location of Ulm offers plenty of opportunities to go skiing on a weekend.

If you would like to do so, please bring your skiing equipment, however it's also possible to rent skis. Ulm has some indoor swimming pools that you can visit. Therefore swim clothes might be a good idea for those who enjoy swimming.

### For the Spring Term

In April it may still snow in Ulm so better bring some warm clothes. The temperatures in May and June can be quite warm and you may already use the outdoor swimming pools in June. If you want to do some travelling you should remember that Southern Europe is a lot warmer at this time of the year.

### In general

For company visits we recommend dress clothes.

Living in a student dorm you do not need to bring linens. Blankets, sheets and pillows will be provided by the dorms but please bring your own towels. The floors will be shared with other students. Each floor has its own kitchen. The voltage in Germany is 230 Volt (50 Hz). You may buy an adapter to use electrical appliances here.

Copies of your passport, credit cards, driver's license etc. are very useful in case they are lost or stolen.

Most shops open at 8 a.m. and close normally at 8.00 p.m. There are some shops that are open until 9 p.m. or later, especially grocery stores. On Sundays every shop is closed.

## Money

You will need a minimum of € 850 for living expenses per month. Credit cards (most common is MasterCard, Visa and American Express) are honored in many places throughout Europe. Do not count on having your credit cards taken in every shop, but they are good to have in case of an emergency.

You will be required to open a German bank account in order to pay your rent and other expenses. This bank account is free of charge for students younger than 30 years and we will assist you in opening it. You can also use it to receive money from your parents, sponsor etc. via bank transfer. You may collect money at the automatic teller machine (ATM) using an ATM card with your personal identification number (PIN). Furthermore the bank account will allow online banking.

## Food

As the Hochschule Ulm and your dorms are not far away from the city center there will be some supermarkets and grocery stores nearby to buy food and drinks. The student canteen (Mensa) offers three to four menus (one vegetarian) each day.

## Dates

You may find the German way of writing dates is different from that which you are used to. To avoid any confusion when you are filling in documents, you should write dates as follows:

12th November 2017 = 12.11.2017 (12 = day, 11 = month, 2017 or 17 = year)

## Some safety tips

Ulm is a safe city to live in and you should feel able to go out and about without fear. However as in most cities and countries throughout Europe you must use your common sense and be aware of your surroundings, particularly at night. Whenever possible, you should avoid walking alone at night and keep out of badly lit streets and lonely areas. Do not accept lifts from strangers and lock your room when you leave it. Let a friend or roommate know where and with whom you will be and do not leave your belongings unattended.

## Field trips

Cultural field trips for example to Munich to visit the German Museum or to the Christmas market in Nuremberg will be organized by the International Office.

As a part of your class, there may also be field trips to industrial companies (e.g. Porsche, BMW or Daimler) some of them combined with places of general interest. Attendance is required. If students have special interests, we will try to arrange a visit.

We are looking forward to seeing you in Ulm!

Your International Office Team

Stephanie Wagner + Anita Everett + Jeanette Kolb + Csilla Csapo

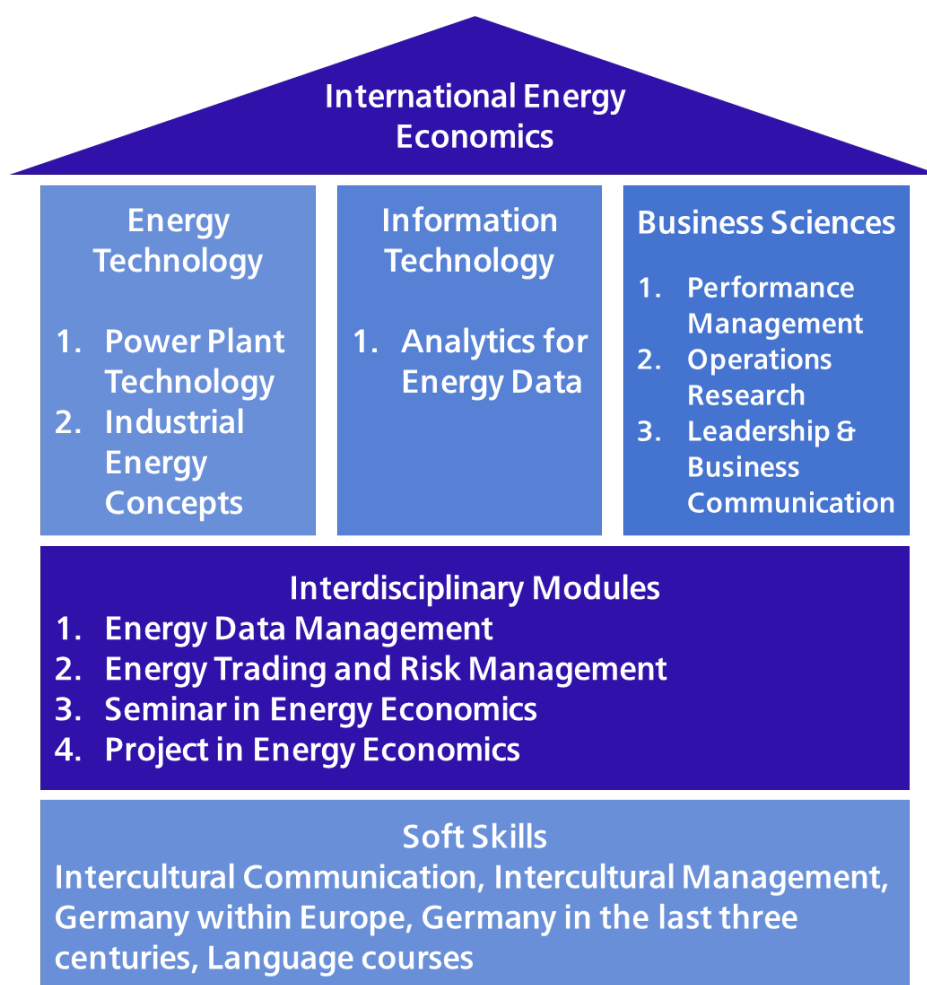
## International Semester Program in Energy Economics (SPEEC)

The program:

The International Semester Program in Energy Economics is offered by the Hochschule Ulm (Ulm University of Applied Sciences) to international students.

The program runs for the regular semester time in spring (March-July) and autumn (October-February) and is taught in English and in classes together with German students.

A variety of different courses in energy economics which combines the fields of Energy Technology, Computer Science, and Business Economics are offered. The lectures are accredited allowing the students to transfer credits back home.



The following lectures are possible

Block 1	
Operations Research	5ECTS
Performance Management and Cost Accounting	5ECTS
Leadership and Business Communication	5ECTS
Analytics for Energy Data	5ECTS
Energy Efficiency	5ECTS
Power Plant Technology	5ECTS



<b>Block 2</b>	
Energy Trading and Risk Management	5ECTS
Energy Data Management	5ECTS
Seminar in Energy Economics	5ECTS
Simulation	5ECTS

<b>Block 3</b>	
German as a foreign language (depending on the level)	2-5 ECTS
Germany within Europe OR Germany In The Last Three Centuries	4 ECTS
Project in Energy Economics	10 ECTS
Intercultural Communication	2 ECTS

#### Remarks:

Please note, that the courses "Seminar in Energy Economics" and "Project in Energy Economics" are limited concerning the number of possible participants.

If you choose courses out of the same block it is ensured that they do not intersect in the time schedule.

The courses out of block 3 can be added in any case. They usually do not cause problems in the time schedule.

It is possible to mix courses of block 1 and 2 but it is not ensured that it is possible in the time schedule.

English taught facultative modules in the field of energy economics will take place every semester as well.

But they vary from semester to semester.

#### Excursions:

Many field trips are organized to different companies in the area.

To get to know Germany and the German culture the International Office also organizes trips for example to the Oktoberfest in Munich, to the Christmas Market in Nuremberg or to Neuschwanstein Castle.

#### Language Courses:

Ulm University of Applied Sciences is offering an intensive German language course for students with no or little knowledge of German. The course takes place before the start of the program and runs two weeks. Students with previous knowledge of German can take part in an introductory one-week block course to refresh their German and learn about aspects of culture and daily life. The program is also accompanied by parallel German language classes for different levels during the semester.

# Operations Research

Course of Study	International Energy Economics	
Identification of Module	Operations Research	
Module coordinator	Prof. Dr. Marc-Oliver Otto	
Instructor	Prof. Dr. Marc-Oliver Otto	
Language of instruction	English	
SWS	Four weekly lecture sessions of 45 minutes each	
Work load	150h	
Credit points	5 ECTS-Credits	
Prerequisites	Mathematics of the first and second semester	
Course Learning Objectives	<p>Upon completion of this course the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Model simple economic problems like production planning, cutting problems, transportations problems, project planning and storage planning.</li> <li>2. Solve the above mentioned models using well-known algorithms like the Simplex algorithm, the Dijkstra or FIFO algorithm, Stepping-Stone method or the Critical Path Method.</li> <li>3. Map the real problems to the right class of models and know which assumptions are relevant and have to be fulfilled.</li> <li>4. Find easy heuristics for different problems her-/himself.</li> <li>5. Program the described algorithms in a computer language he knows.</li> </ol>	
Topics Covered	Week	Topics
	1	Introduction to Operations Research
	2	Modeling of economic problems
	3	Modeling of economic problems
	4	Matrices and linear programming
	5	Graphical solution of LP
	6	The Simplex method
	7	Excursion Week
	8	Theory of graphs and networks
	9	Shortest-route
	10	Minimal spanning tree
	11	Advanced LP – transportation models and its variants
	12	Advanced LP – transportation models and its variants
	13	Network and project planning
	14	Inventory Management
15	Exams	
Mode of Evaluation	90 minutes exam	

Computer Usage	Some models and algorithms are being shown on the computer
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# Performance Management and Cost Accounting

Course of Study	International Energy Economics	
Identification of Module	Controlling and Cost Accounting	
Abbreviation if required	CKLM	
Module coordinator	Prof. Dr. Gaisbauer-Pointner	
Instructor	Prof. Dr. Gaisbauer-Pointner	
Language of instruction	English	
Work load	45 minutes x 4 per week 90 minutes exam in week 14 150h	
Credit points	5 ECTS-Credits	
Prerequisites	Basic accounting skills or additional home study required	
Educational objective / Competency	<p>Upon completion of this course the students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the basics of financial and management accounting as well as the difference between direct and indirect, mixed, variable and fixed costs and the resulting implications for businesses.</li> <li>2. See the importance of KPIs for business and team performance. Understand how different KPIs interrelate.</li> <li>3. Find examples in real-world situations where non-financial performance measures are needed to assist decision-making.</li> <li>4. Apply different methods of product costing, activity-based costing and inventory accounting when needed.</li> <li>5. Understand and correctly interpret current texts about the financial topics discussed in class.</li> </ol>	
Content	Week	Topics
	1	Introduction to Performance Management and Cost Accounting, difference between accrual accounting and cash accounting
	2	Management Accounting Overview and Professional Ethics; period-end accounting and continuous accounting; US-GAAP and IFRS
	3	Financial Accounting continued US-GAAP text and example
	4	Balance Sheets, Income Statements and Cash Flow Statements in different GAAPs and IFRS
	5	Going Public, Going Private, ICO and VUCA

	6	Share deals and assets deals; rolling forecasts; the treasury
	7	Performance Measurement to Support Business Strategy
	8	Value-based Management and Various Key Figures from Alpha to EVA
	9	The Balanced Scorecard
	10	Cost Accounting Basics; Cost Behaviour
	11	Cost-Volume-Profit Relationships; Activity-based Costing
	12	Product Costing: Cost Allocation; Pricing Decisions
	13	Accounting for Inventory
	14	Revision

# Leadership and Business Communication

Module coordinator	Prof. Dr. Dippe												
Amount of weekly sessions	4 sessions of 45 minutes each												
Total work load	150 h												
Credit points	5 ECTS												
Prerequisites	None												
Learning objectives	<p>Managers are required to successfully lead (international) teams, understand organisational contexts and change as well as achieve goals through professional internal communication regardless of their own technical background.</p> <p>This seminar imparts the knowledge and competencies necessary to deal with organisational behaviour, leadership and corporate communication and well as intercultural aspects of management.</p> <p>Furthermore, participants will prepare CEO / consultant presentations and develop their communication skills in this method.</p>												
Content	<table border="1"> <thead> <tr> <th>Topics</th> </tr> </thead> <tbody> <tr> <td>Introduction to the course and the technique of CEO presentations.</td> </tr> <tr> <td>Leadership in organisations</td> </tr> <tr> <td>Organisational structures and their impact on communication</td> </tr> <tr> <td>Corporate culture and interculture</td> </tr> <tr> <td>Intercultural leadership competence</td> </tr> <tr> <td>Diversity management</td> </tr> <tr> <td>Decision making and micro-politics in organisations</td> </tr> <tr> <td>Corporate communication</td> </tr> <tr> <td>Negotiation</td> </tr> <tr> <td>Business ethics and CSR</td> </tr> <tr> <td>Public Affairs and crisis communication</td> </tr> </tbody> </table>	Topics	Introduction to the course and the technique of CEO presentations.	Leadership in organisations	Organisational structures and their impact on communication	Corporate culture and interculture	Intercultural leadership competence	Diversity management	Decision making and micro-politics in organisations	Corporate communication	Negotiation	Business ethics and CSR	Public Affairs and crisis communication
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Negotiation													
Business ethics and CSR													
Public Affairs and crisis communication													
Mode of evaluation	Exam (90 minutes) plus group presentation or essay												

# Analytics for Energy data

Course of Study	International Energy Economics		
Identification of Module	Analytics for Energy data		
Abbreviation if required	AFED		
Semester	5		
Module coordinator	Prof. Dr. Herbort		
Instructor	Prof. Dr. Herbort		
Language of instruction	English		
Academic form / SWS	4		
Work load	150 hours		
Credit points	5 ECTS		
Educational objective / Competency	<p>Upon completion of this course the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Follow the CRISP-DM Process for data centric projects</li> <li>2. Model a relational Data Warehouse database</li> <li>3. Perform an ETL process including data quality assessment</li> <li>4. Transform data for the application of analytic methods</li> <li>5. Set up a relational Data Warehouse</li> <li>6. Design reports including diagrams and pivot tables</li> <li>7. Use a tool to obtain and employ Data Mining models, e.g. decision trees or association rules</li> </ol>		
Content		Week	Topics
		1	Basic techniques I: Working with desktop and client-server databases
		2	Basic techniques II: Creating visualizations and pivot tables for reports
		3	The CRISP-DM process model and Case Study I: Business Understanding (based on House Automation data)
		4	Case Study II: Data Understanding and ETL
		5	Case Study III: Data Preparation - Part 1 using multidimensional data models
		6	Case Study IV: Data Preparation - Part 2 using a staging area and transformation scripts
		7	Theory of Data Warehouses and Case Study V: Implementation - Setting up the Data Warehouse

	8	Case Study VI: Deployment (Performing analyses)
	9	Data Mining I: Classification methods
	10	Data Mining II: Association Rule Learners
	11	Exams
Forms of Media	The course is primarily designed as an E-Learning course with practical exercises requiring computer use. <i>The students are required to bring their own external USB hard disks!</i>	
Written materials	Witten/Frank: Data Mining, Morgan Kaufman, 4 <sup>th</sup> ed.	



## Energy Efficiency (Industrial Energy Concepts)

Course of Study	International Energy Economics	
Identification of Module	Energy Efficiency (Industrial Energy Concepts)	
Module coordinator	Prof. Dr. Georg Kleiser	
Email	kleiser@hs-ulm.de	
Language of instruction	English	
Prerequisites	<p>First and second law of thermodynamics</p> <p>Thermodynamic properties of materials (ideal gas, steam, liquids)</p> <p>Basic knowledge about heat transfer and fluid dynamics</p>	
Course learning objectives	<p>Students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the fundamentals and the technologies of the most important industrial energy conversion processes.</li> <li>2. Calculate energy efficiency indicators and illustrate energy flows.</li> <li>3. Analyze manufacturing processes in respect of their energy consumption.</li> <li>4. Understand how energy management systems can be integrated into the manufacturing processes.</li> <li>5. Evaluate various industrial energy supply networks (compressed air, steam systems, hot water supply) in respect of energy efficiency.</li> <li>6. Find solutions to reduce the energy consumption of manufacturing processes and industrial energy systems.</li> </ol>	
Content	<p>About 25% of the final energy consumed in the EU is utilized for industrial processes. Increasing energy efficiency in this sector is one key target to reduce the emission of greenhouse gases on one hand and the economic dependency on energy prices on the other hand.</p> <p>In the first part of the course the relevance of energy as resource for manufacturing processes will be discussed. General methodologies to improve energy efficiency on basis of energy balances and energy flow analysis will be shown. Energy efficiency indicators will be introduced to evaluate and judge energy efficiency improvements in the context of manufacturing.</p> <p>The second part of the course deals with the optimum design of energy-efficient industrial networks and energy conversion processes. Compressed-air, steam and condensate systems will be discussed in detail. Some key components in manufacturing processes, for example electric drives and furnaces are studied in respect of their energy balance. The knowledge and methods will be applied in a team exercise, which is mandatory for all participants.</p>	
Topics covered	Week	Topics
	1	Basic statistics about energy supply and energy consumption in industry, trade and

		commerce; energy types; industrial energy systems
	2	Energy indicators (specific energy consumption, cumulated energy demand, energy efficiency factor), Characterization of systems, energy balances
	3 -4	Energy flow charts, First and second law efficiency, exergy
	5	Energy management systems, methodology of energetic optimization, economic aspects of energy efficiency
	6	Industrial energy networks (compressed air, exhaust and supply air systems, heat recovery)
	7	Hot water and steam systems, lubrication and cooling systems
	8	Energy efficient drive systems, transportation of fluids and materials
	9	Energy balances of furnaces, drying processes
	10-11	Teamwork and Presentation
Textbook	Prof. Dr. Kleiser: Script	
References	Integrated Pollution Prevention and Control: Reference Documentation on Best Available Techniques on Energy Efficiency. European Commission, 2008	

## Power Plant Technology (Introduction)

Course of Study	International Energy Economics
Abbreviation if required	KRAT
Semester	3. Sem / mandatory module for energy economics students
Module coordinator	Prof. Dr. Franz Böhm
Language of instruction	English
Work load	120 hours that are campus-based 30 hours self-study
Credit points /Contact hours	5.0 ECTS-Credits / 4.0
Prerequisites	Technical thermodynamics (THDYN, 2011) Regenerative energy systems (REES, 2031)
Frequency	Summer and winter semester
Relevance for the qualification	The energy economist needs a fundamental understanding of power plants in order to evaluate different technologies of power generation. This requires the realistic determination of achievable degrees of efficiency as well as potentials to reach these. Moreover, it is important to judge which technological limits exist in the respective subsystems of power generation and which development potential exist to date. Particular emphasis is given to the interaction between technological possibilities and their economic impact.
Content	Acquisition of the aforementioned competences and abilities is achieved by treating the following subjects: <ul style="list-style-type: none"> <li>• Consolidation of relevant thermodynamic basics (major laws, Carnot and Rankine cycles, concept of availability and inavailability)</li> <li>• General aspects of power plant technology (categorization of technologies)</li> <li>• Fossil fired power plants Coal power plants Oil and gas power plants</li> <li>• Nuclear power plants Fission reactors (pressurized and boiling water reactors, miscellaneous reactor types) Fusion reactors (Tokamak, Stellarator)</li> </ul>
Examination	Written exam (90 min)
Learning achievements	After successful completion the student is able to Professional competence: <ul style="list-style-type: none"> <li>• judge which maximum degrees of efficiency are achievable in thermal power plants</li> <li>• are capable of setting up a rough energy balance for a power plant and its major components</li> <li>• are able to associate technological development with economic aspects.</li> </ul>

	<p>Methodological competences:</p> <ul style="list-style-type: none"> <li>• Balancing of energy streams</li> <li>• Evaluation of cycle processes</li> </ul> <p>Social and individual competence: n.a.</p>
Literature	<ul style="list-style-type: none"> <li>• [1] M.M. El-Wakil: Powerplant Technology, McGraw-Hill Book Co., New York, International Edition 1984.</li> <li>• [2] K. Strauß: Kraftwerkstechnik; Springer Verlag, 6. aktualisierte Auflage, Heidelberg, 2009.</li> </ul> <p>Complementary literature:</p> <ul style="list-style-type: none"> <li>• R. Müller: Thermodynamik, De Gruyter Studium; Berlin, 2014.</li> <li>• E. Querol, B. Gonzalez-Regueral, J.L. Perez-Benedito: Practical Approach to Exergy and Thermo-economic Analyses of Industrial Processes, Springer Verlag, London, 2013.</li> </ul>

# Energy Trading and Risk Management

Course of Study	International Energy Economics
Identification of Module	Energy Trading and Risk Management
Abbreviation if required	ETRM
Semester	5 or 4 respectively
Module coordinator	Prof. Dr. Marc-Oliver Otto
Instructor	Prof. Dr. Marc-Oliver Otto
Language of instruction	English
Academic form / SWS	4 SWS
Work load	150h
Credit points	5 ECTS
Prerequisites	Basics of statistics stochastic
Educational objective / Competency	<p>The liberalization of the energy sector extends the requirements on entrants to the electricity and the gas industry fundamentally. The other energy commodities like coal, oil and CO<sub>2</sub> face these problems and requirements respectively since years. Due to the becoming and the existence of the wholesale and the exchange prices in the spot and derivatives trading, the whole, more technically oriented, value chain, which consists of the sectors generation, grid and distribution, is affected. The trade market prices influence the short-term deployment of power plants and give signals for long-term investment decisions.</p> <p>Within the scope of the course the basics of energy trading and the accompanying risk management is been illustrated. Cross border, long-term and short-term trading simulations, the "Energy trader for one day"-experience completes the module.</p>
Content	<p>Introduction in the energy trading</p> <ul style="list-style-type: none"> <li>• Overview on the value chain - Classification of the trading between electricity generation and distribution</li> <li>• Tradable commodities, trading market and the link to the physically generation</li> <li>• The role of the energy trading</li> <li>• Advantages and reasons of trading</li> </ul> <p>Trading purposes (Hedging, Arbitrage, Speculation)</p> <ul style="list-style-type: none"> <li>• Trading center (exchanges, OTC, eOTC)</li> <li>• Standardization</li> <li>• Link to physical supply of electricity: accounting grid, regulation zones/ market areas, timetable management, prices for balancing energy</li> </ul>

	<ul style="list-style-type: none"> <li>• Organization of trading and trading participants</li> </ul> <p>Structure of a trading organization</p> <ul style="list-style-type: none"> <li>• Spot market, derivatives market</li> <li>• Market products: Forwards, Futures, Options</li> <li>• Price formation in the energy trading</li> </ul> <p>Spot market - Link of the spot prices to the power plant deployment</p> <ul style="list-style-type: none"> <li>• Derivative market – Basis for long-term investment decisions</li> <li>• Clearing</li> <li>• Trading strategy</li> </ul> <p>Basis for the trade – Arbitrage of the resulting price differences in the physical energy market and gas market</p> <ul style="list-style-type: none"> <li>• Option strategies and option assessment</li> <li>• Optimization of forward positions</li> <li>• Power plant deployment planning</li> </ul> <p>Long-term hedging Short-term daily deployment planning Introduction in risk management</p> <ul style="list-style-type: none"> <li>• Overview</li> <li>• Role of the risk management in a trading organization</li> <li>• Price risk management and credit risk management</li> <li>• Price risk management and credit risk management</li> <li>• Price risk management</li> <li>• Credit risk management Pricing</li> </ul> <p>Simulations</p> <ul style="list-style-type: none"> <li>• Cross border</li> <li>• Short-term</li> <li>• Long-term</li> </ul>
Written materials	<p>Markus Burger and Bernhard Graeber and Gero Schindlmayr: "Managing energy risk: An Integrated View on Power and other Energy Markets", 2003, John Wiley &amp; Sons, Ltd., Hoboken, New Jersey</p> <p>"Energy Risk" of Dragana Pilipovic.</p> <p>German sources would be "Handbuch Energiehandel" of Schwintkowski and "Energiehandel in Europa" of Zenke and Schäfer.</p>

# Energy Data Management

Course of Study	International Energy Economics	
Identification of Module	Energy Data Management	
Abbreviation if required	EDAT	
Semester	5	
Module coordinator	Prof. Gerd Heilscher	
Instructor	Prof. Gerd Heilscher	
Language of instruction	English	
Work load	150h	
Credit points	5 ECTS	
Prerequisites	Basic knowledge of central and decentralized energy systems and energy economy	
Educational objective / Competency	<p>Upon completion of this course the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the role model of the energy market in Europe</li> <li>2. Model a price settlement at the energy stock exchange (EEX) with the merit order.</li> <li>3. Describe the energy economics of the German Feed in Law and analyze the influence to the energy prices at the EEX. Map</li> <li>4. Estimate the potential of load shifting in private households</li> <li>5. Calculate the amount of solar electricity to be directly used in a household</li> <li>6. Evaluate the error of wind and solar power predictions</li> </ol>	
Content	<b>Week</b>	<b>Topics</b>
	1	The role model of the liberalized energy markets in Europe
	2	Price settlement with merit order
	3	Contracts and business processes in the energy market
	4	The energy stock exchange market
	5	Power flow analysis of wind and solar power systems
	6	Energy meteorology, wind and solar power forecast
	7	Project
	8	Project
	9	Project
	10	Project

	11	Project-Presentation
	Four weekly seminar sessions and two lab sessions of 45 minutes each. Maximum of 20 participants	
Examination requirements	30 Minutes oral presentation (30%) and written project Report (70%), attendance at 80% of the seminar.	
Forms of Media	Intensive use of Excel	



## Seminar in Energy Economics

Course of Study	International Energy Economics
Identification of Module	Seminar in Energy Economics
Module coordinator	Prof. Gerd Heilscher/ Prof. Dr. Marc-Oliver Otto
Instructor	Prof. Gerd Heilscher/ Prof. Dr. Marc-Oliver Otto
Language of instruction	English
Academic form / SWS	Seminar
Work load	150h
Credit points	5 ECTS
Educational objective / Competency	The student familiarizes himself with a specialized topic in energy economics, by reading of original literature, by presenting the topic to an audience, and by producing a final paper.
Content	<ul style="list-style-type: none"> <li>• In the first week of the semester (after the lectures started) the students can choose a seminar topic out of a set of different papers</li> <li>• In the second half of the semester all of the students present the paper study</li> </ul> <p>Remark: The work in the seminar is being done alone, not in groups.</p>
Examination requirements	The given presentation, together with answering question concerning all the presentation and an additional group work

# Simulation

Course of Study	International Energy Economics
Identification of Module	Simulation
Abbreviation	SIMU
Module coordinator	Prof. Dr. Christian Iniotakis
Instructor	Prof. Dr. Christian Iniotakis
Language of instruction	English
Academic form / SWS	4 SWS
Work load	150 h
Credit points	5 ECTS
Prerequisites	Logical thinking, basic mathematics, joy in getting a deeper understanding of complex systems.
Educational objective / Competency	<p>Upon completion of this course, students</p> <ul style="list-style-type: none"> <li>- have a basic insight into simulations and know, when it is reasonable and valuable to use them</li> <li>- are able to perform a market dynamics simulation study in Excel themselves</li> <li>- understand the underlying mechanisms behind market cycles and cost-cutting competition, as well as the impact of different supplier strategies, innovation and cartels.</li> <li>- learn how to handle stochastic systems of various types and topics themselves; e.g. queuing systems, soccer games, machine efficiencies, virus mutations, oil terminals, blackouts in networks, etc.</li> </ul>
Examination	Written exam (90 min)

## Project in Energy Economics

Course of Study	International Energy Economics
Identification of Module	Project in Energy Economics
Semester	5
Module coordinator	Professor Dr. Barbara Gaisbauer-Pointner
Language of instruction	English
Academic form / SWS	Project
Work load	300h
Credit points	10 ECTS
Educational objective / Competency	The student acquires the ability to work on a larger problem in energy economics in a small team, applying and training methods and techniques developed in courses.
Content	<ul style="list-style-type: none"> <li>• In the first week of the semester (start of the lectures) the students can choose out of a set of different project topics</li> <li>• In the last week of the exams (2 weeks after the end of the lecture) the students present their work</li> <li>• After 6 months after the students got their projects they have to hand-in the final result of their project work</li> <li>• Some lectures about academic work are completing the module</li> </ul> <p>Remark: The projects are being worked on in groups</p>
Examination requirements	Written paper, poster presentation, presentation

## Germany within Europe

Identification of Module	Germany within Europe
Semester	Winter Semester (October – February)
Module coordinator	Mrs. McLeod
Instructor	Mrs. McLeod
Language of instruction	English
SWS	4 sessions of 45 minutes per week
Credit points	5 ECTS-Credits
Course learning objectives	<p>Upon completion of this course the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Explain effects of major historical events on German life</li> <li>2. Demonstrate knowledge of periods of German history</li> <li>3. Demonstrate through comparative analysis knowledge of present and historical background of Germany within its relations to Europe and U.S.</li> <li>4. Demonstrate critical thinking skills through tracing main historical concepts in actual historical events</li> </ol>
Content	<p>This course explores most important topics in the history Germany in the context of European history. Emphasis is placed on developing an understanding for major political, social and economic aspects of German history and on tracing the German historical experience in its context. The comparison of historical time periods between European and U.S. history provides grounds for exploration of German history and German relations with other countries throughout the world.</p>
Required Reading	<p>Axelrod Alan, Phillips, Charles: What everyone should know about the 20th century; Adam Publishing, Holbrook MA, 1995</p> <p>Tarnas, Richard: The passion on the Western mind, Understanding ideas that shaped the Western World View; Random House Toronto, 1993</p> <p>Facts about Germany, Societäts-Verlag, Frankfurt 2000</p>
Mode of Evaluation	<p>Attendance and reading required, one written test, one presentation on a relevant topic Distribution: Participation 30%, Test 40%, Essay 30%</p>
Computer usage	Basic computer skills (MS Word)
Textbooks	<p>Buchner, Rudolf: Deutsche Geschichte im Europäischen Rahmen; Wissenschaftl. Buchges. Darmstadt, 1975</p> <p>Burns, Rob: German Cultural Studies, an Introduction; Oxford University Press, New York, 1995</p> <p>Der große PLOETZ, Herder Verlag Freiburg 1998</p>

	<p>Gebhardt, Bruno: Handbuch der Deutschen Geschichte, Union Verlag Stuttgart</p> <p>Gilbert, Felix; Large, David Clay: The End of the European Era, 1890 to the Present, published within the Norton History of Modern Europe Series, New York 1991</p> <p>Hartwich, Hans-Hermann: Politik im 20.Jahrhundert; Westermann Verlag 1974</p>
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## Germany within the last three centuries

Identification of Module	Germany within the last three centuries
Semester	Summer Semester (March – July)
Module coordinator	Professor Dr. Klaus Peter Kratzer
Instructor	Professor Dr. Klaus Peter Kratzer
Language of instruction	English
Curriculum specification	<ol style="list-style-type: none"> <li>1. An Overview of German history up to and including reformation and the Thirty Years War.</li> <li>2. Culture, society, and political developments in the 18<sup>th</sup> century. The rise of Prussia. The impact of the French revolution.</li> <li>3. Reform and liberation. German federation. German nationalism in the 19<sup>th</sup> century as expressed in music and literature.</li> <li>4. Revolution in 1848. Bismarck and his struggle for Prussian hegemony.</li> <li>5. The German Empire &amp; the 1<sup>st</sup> World War. The foundation of the Reich. Bismarck's domestic policy. Colonial policy. The culture of the Wilhelmine Empire. Crises and naval building. The 1<sup>st</sup> World War.</li> <li>6. The Weimar Republic. Foundation of the Republic. The Versailles Treaty. Crises &amp; fulfillment. The collapse of the republic.</li> <li>7. Nazi Germany &amp; the 2<sup>nd</sup> World War. The pseudo-democratic establishment and consolidation of the Nazi state. Social life and economic policy. The 2<sup>nd</sup> World War. Concentration camps and the Holocaust. The collapse of Nazi Germany.</li> <li>8. The aftermath of the wars. Germany under occupation. The Iron Curtain. The foundation of the Federal Republic and the German Democratic Republic. Integration in different systems of alliances.</li> <li>9. Detente and German reunification. The economic miracle in West Germany. West Germany's "east policy". The collapse of East Germany. Reunification and consolidation.</li> </ol>
Work load	Four class periods per week
Credit points	4 ECTS
Prerequisites	none
Course learning objectives	<p>Each student who receives credit for this course will have demonstrated the ability to do all of the tasks listed below:</p> <ol style="list-style-type: none"> <li>1. Describe and explain the political developments in and around Germany for the period under discussion</li> <li>2. Describe and explain the socio-cultural evolution in Germany for the period under discussion</li> <li>3. Explain the development of the German political system</li> <li>4. Explain attitudes and customs in present-day Germany from an historical viewpoint</li> </ol>

Content	German history up to and including reformation and the Thirty Years War; culture, society, and political developments in the 18 <sup>th</sup> century; reform and liberation; German federation; revolution in 1848; Bismarck and his struggle for Prussian hegemony; the German Empire & the 1 <sup>st</sup> World War; the Weimar Republic; Nazi Germany & the 2 <sup>nd</sup> World War; the aftermath of the wars; detente and German reunification
Textbooks	Martin Kitchen: <i>Cambridge Illustrated History of Germany</i> , Cambridge University Press, Cambridge 1996  Numerous source materials (print, audio, video) in English or in English translation (to be distributed in class)

# Intercultural Communication

Identification of Module	Intercultural Communication
Module coordinator	Professor Dr. Barbara Gaisbauer-Pointner
Instructor	Professor Dr. Barbara Gaisbauer-Pointner
Language of instruction	English
Work load	Two class periods per week
Credit points	2 ECTS
Prerequisites	none
Course learning objectives	<p>After successfully completing this course students should be able to:</p> <ul style="list-style-type: none"> <li>- demonstrate understanding of major concepts and approaches in the field of intercultural communication</li> <li>- understand the many issues involved in the concept of culture and the close relationship between communication and culture</li> <li>- devise strategies to effectively meet the various challenges inherent in intercultural communication</li> <li>- demonstrate competency in written, oral and interpersonal communication skills</li> <li>- demonstrate competency in 20 minutes professional presentations, the giving and receiving of feedback after presentations and sometimes also in (short) essay writing</li> <li>- have a better understanding of how to develop and manage career choices or outcomes especially overseas and in enterprises dealing with foreign clients</li> </ul>
Content	<p>The difference between national cultures and organisational cultures</p> <p>Iceberg Theory by Edward T. Hall</p> <p>Trompenaar's Dimensions</p> <p>Hofstede's Dimensions</p> <p>Tips on doing business in different cultures</p> <p>Body space / distance in different cultures</p> <p>High and low context cultures</p> <p>The concept of "face"</p> <p>Values in different societies</p> <p>Some selected topics like:</p> <p>Men and Women in different cultures</p> <p>Prejudices and stereotypes: useful or harmful?</p> <p>Table manners in different cultures</p> <p>Dresscodes in different cultures</p> <p>The role of religion in different cultures</p> <p>Saying „Yes“ or „No“;</p> <p>Gestures in different cultures</p> <p>10 ways to embarrass people in other countries</p> <p>Timekeeping in different cultures</p> <p>Failure culture/no blame culture (e.g. Japan versus US)</p> <p>Typical last names and first names in different</p>



	<p>cultures/countries/regions/religions          Indonesian gengsi, Chinese guanxi .... explain and find more examples from different cultures          Sun Tsu and doing business in China          The control of aggression and the expression of emotions in different cultures</p>
<b>Required Reading</b>	<p>Various chapters from:          Hofstede, Geert and Hofstede, Gert Jan, 2013, Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations Across Nations and other works by the same authors. Waisfisz, Bob: Constructing the Best Culture to Perform</p>
<b>Mode of Evaluation</b>	<p>Discussions in class, presentation(s), exam.</p>

## German language

Course of Study	"Exchange Students"
Identification of Module	German language
Module coordinator	Various, responsible: Professor Dr. Ben Dippe
Instructor	Various, responsible: Professor Dr. Ben Dippe
Language of instruction	German
Work load	4/8 class periods per week
Credit points	2 – 5 ECTS
Prerequisites	Depending on the desired level: none to B1
Course learning objectives	This course will provide basic or intermediate competence in speaking and reading German.
Content	<p>Students will take classes according to their results in a placement test at the beginning of the term.            Courses are available according to levels A1.1 (absolute beginners) to B1.2 (intermediate plus).</p> <p>At the end of the course students have to sit an examination.</p>
Mode of Evaluation	Exam (90 minutes)
Textbooks	<p>Menschen (A1.1 – B1.2), Hueber Verlag</p> <p>Numerous source materials (print, audio, video) in English or in English translation (to be distributed in class)</p>