Umwelt-Campus Birkenfeld | HOCHSCHULE TRIER

Module Descriptions

Bachelor Program

Sustainable Business and Technology

(B. Eng.)

FachPO

WiSe 2023/24

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supplemented by the following amending regulations:

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MISSION STATEMENT TEACHING

Trier University of Applied Sciences, as an application-oriented educational and research institution with an international orientation and regional roots, accompanies its students in the development of a future-oriented portfolio of competencies that includes interdisciplinary and supra-disciplinary aspects in addition to discipline-specific ones. For the qualification profile of the students this means

- to build up current professional, personal and methodological competences,
- developing key competences and
- to be enabled to take on social responsibility

Innovative forms of teaching and learning support students in the independent and individual organisation of their studies. Practical relevance and interdisciplinarity are core elements of teaching. Graduates are able to work on tasks in their specialist discipline in a professionally sound and interdisciplinary manner, to adapt to new tasks and to acquire the necessary knowledge on their own responsibility.

The professional and methodological design of the degree programmes in the form of the development of a concrete qualification goal on the current state of science and art is oriented to these overarching premises.

Therefore, for us, good teaching means pursuing these goals through the joint efforts of all members of the university.

With this in mind, the members of Trier University of Applied Sciences are committed to the following principles:

Students

- take responsibility for their own learning process,
- cultivate self-study and learn the necessary techniques to do so,
- give constructive feedback to the teaching staff and actively shape the teaching and the university through their participation in committees.

Teaching

- ensure a high professional level that has a current application and research reference,
- enable students to participate in practice and research projects and promote the development of new knowledge and perspectives with the goal of academic excellence,
- promote the learning process of students through appropriate didactic methods and align their teaching with the competencies to be taught,
- use feedback and evaluation for their own further development and continuously develop their teaching concepts.

The employees of the departments and the service facilities

- advise students comprehensively throughout the entire student life cycle and qualify them in interdisciplinary offerings,
- support all university members with a high level of service orientation and professionalism,
- participate in the expansion and further development of the infrastructure in line with demand.

The Presidential Board, the department heads and the university committees

- provide adequate funding for infrastructure and human resources,
- assume responsibility for the implementation of this mission statement.

All members of the university treat each other with respect.

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Curriculum Sustainable Business and Technology

	Start at winter semester		SWS	ECTS	Module Weight
1st Semester	M 1	Mathematics I	4	5	5
	M 2	Physics	4	5	5
	M 3	Fundamentals of Sustainable Business I	4	5	5
	M 4	Fundamentals of Accounting	4	5	5
	M 5	Intercultural Communication	4	5	5
	M 6	German I / Foreign Language / Elective *[3]	4	5	5
		Total	**24**	**30**	**30**
2nd Semester	M 7	Mathematics II	4	5	5
	M 8	Chemistry and Ecology	4	5	5
	M 9	Thermodynamics	4	5	5
	M 10	Principles of Engineering I	4	5	5
	M11	Accounting	4	5	5
	M12	German II / Foreign Language / Elective *[3]	4	5	5
		Total	**24**	**30**	**30**
3rd Semester	M13	Principles of Engineering II	4	5	5
	M14	Information Technology	4	5	5
	M15	International Law and International Economic Policy	4	5	5
	M16	Scientific Methods and Concepts	4	5	5
	M17	Corporate Finance	4	5	5
	M18	German III / Foreign Language / Elective *[3]	4	5	5
		Total	**24**	**30**	**30**
4th Semester	M19	Sustainable Waste and Waste Water Treatment Technologies	4	5	5
	M20	Sustainable Energy Systems	4	5	5
	M21	Lab Work	4	5	5
	M22	Manufacturing Technology	4	5	5
	M23	Cleaner Production and Operations Management	4	5	5
	M24	German IV / Foreign Language / Elective *[3]	4	5	5
		Total	**24**	**30**	**30**
5th Semester	M25	Ethics and Society	4	5	5
	M26	Elective***[1]**	4	5	5
	M27	Elective***[1]**	4	5	5
	M28	Interdisciplinary Project***[2]**	8	10	10
	M29	German V / Foreign Language / Elective *[3]	4	5	5
		Total	**24**	**30**	**30**
6th Semester	M30	Elective***[1]**	4	5	5
	M31	Elective***[1]**	4	5	5
	M32	Career Planning and Employability	4	5	5
	M33	Thesis and Colloquium		15	15
		Thesis	-	12	12
		Colloquium		3	3
		Total	**12**	**30**	**30**
		Total	**132**	**180**	**180**

Further information and notes on the curriculum

***[1]** In the fifth and sixth semesters, students in the English-language bachelor's degree program "Sustainable Business and Technology" have the opportunity to set study foci in order to enable individual profile formation and orientation towards a later field of activity.

A total of four electives (modules 26, 27, 30 and 31) with a total of 20 ECTS must be selected according to the module handbook. These are usually provided in the form of 5 ECTS modules each and are to be selected from the catalog of compulsory elective modules for the degree program regulated in these regulations. The catalog of compulsory elective modules is determined and published by the head of the study program. This may be updated on a semester-by-semester basis.

In addition, students have the possibility, after consultation with the head of the study program, to take 5 ECTS modules from the bachelor's degree programs offered at the Environmental Campus Birkenfeld.

More details can be found in the respective module handbook.

***2** The module is usually carried out in the form of two projects, each comprising 5 ECTS. It is also possible to combine this module into one large project with a scope of 10 ECTS.

***3** The modules "German I-V / Foreign Language / Elective" include the courses "German as a foreign Language I-V" for foreign students. For students whose native language is German and foreign students with proven knowledge of German, there are alternative options for taking other languages or electives from the compulsory elective module catalogue of this degree program.

Curriculum Sustainable Business and Technology in the Bachelor double degree program according to the cooperative agreement with Foshan University

Start at winter semester	SWS	ECTS	Module Weight

Before starting the program at the Environmental Campus Birkenfeld of the Trier University of Applied Sciences, the achievements according to the requirements of the cooperation agreement must be completed.

Upon beginning their studies at the Environmental Campus Birkenfeld of Trier University, students of the cooperation program will be enrolled in the fifth semester of the English-language bachelor's degree program "Sustainable Business and Technology". Instead of the achievements of the fifth and sixth semester of Annex 1 of the FachPO (examinations regulations), they must complete the following achievements of Annex 3 of the FachPO. ***1**

5th Semester	M 3	Fundamentals of Sustainable Business I		4	5	5
	M 5	Intercultural Communication		4	5	5
	M 15	International Law and International Economic Policy		4	5	5
	M 25	Ethics and Society		4	5	5
	M 28	Interdisciplinary Project		4	5	5
	M 29	German as a foreign language V		4	5	5
			Total	**24**	**30**	**30**

6th Semester	M 30	Elective***2**		4	5	5
	M 31	Elective***2**		4	5	5
		Regionales Stoffstrommanagement und Regional Practice (M 12 from the bachelor program Nonprofit und NGO-Management)		4	5	5
	M 33	Thesis and Colloquium			15	15
		Thesis		-	12	12
		Colloquium			3	3
			Total	**12**	**30**	**30**
			Total	**36**	**60**	**60**

Further information and explanation of the curriculum

***1** The achievements of the first to sixth semesters at Foshan University of Science and Technology will be certified by the cooperation partner after successful completion of the bachelor double degree program in accordance with the regulations of the respective current cooperation agreement. The grades are reported according to the grading system valid at the cooperation partner. The grades are reported according to the grading system valid at the cooperation partner. At the Environmental Campus Birkenfeld of the Trier University of Applied Sciences, the modules listed here must be completed to the extent of 45 ECTS as well as the Bachelor's thesis and the colloquium to the extent of 15 ECTS.

These achievements are certified by Trier University of Applied Sciences - Environmental Campus Birkenfeld in accordance with the regulations of the respective current examination regulations in conjunction with the regulations of the respective current cooperation agreement. The grades are shown according to the grading system valid here.

In addition, the regulations of the respective current cooperation agreement are binding and must be observed.

***2** In the sixth semester, the students of the cooperation program have the possibility to set study foci in order to enable an individual profile formation and the orientation towards a late-residential field of activity.

A total of two electives (modules 30 and 31) with a total of 10 ECTS must be selected according to the module handbook. As a rule, these are provided in the form of 5 ECTS modules each and are to be selected from the catalog of compulsory elective modules for the degree program regulated in these regulations. The catalog of compulsory elective modules is determined and published by the head of the study program. It can be updated every semester.

In addition, students have the possibility, after consultation with the head of the study program, to take 5 ECTS modules from the bachelor's degree programs offered at the Environmental Campus Birkenfeld.

More details can be found in the respective module handbook.

Module 1: Mathematics I		MATHENG I
Duration	1 semester	
Study Semester	1st semester	
Frequency	Winter semester	
Recommended Prerequisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture, Integrated exercises	
Responsible for Module	Prof. Dr. Stephan Didas	
Teaching Personnel	Prof. Dr. Stephan Didas	
Requirement for Awarding of ECTS Points	Passed module examination Passing an intermediate test is required for registering for the final exam.	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

After the successful attendance of the course, students will be able to understand and apply basic notation of mathematical models. They will be able to perform basic arithmetic operations for complex numbers and functions and to model them for applications tasks. Students are able to analyze functions with one or more variables in terms of differential and integral calculus and to apply this in practical examples (e. g. in extreme value problems or for calculating areas and volumes). The students are able to explain the principle of approximation of a sufficiently smooth function by polynomials using the Taylor formula.

2 Module Content and Course Schedule

Content of the module is the understanding of mathematical models involving complex numbers and real functions of one and several variables:

1. Complex numbers
2. Sequences of real numbers and infinite sums
3. Functions
4. Limits and continuity
5. Differential and integral calculus in one real variable
6. Differential and integral calculus in more than one real variables
7. Taylor series

Course Schedule

1. Complex numbers and the basic operations with them are introduced.
2. A selection of elementary real functions is discussed in order to allow the students to understand models in engineering.
3. The basics of differential and integral calculus are presented and typical example problems are discussed.
4. The approximation of functions with polynomials via Taylor series is shown.

3 Didactic Concept

Lecture with integrated exercises, practicing by given example problems and potential tutorials.

4 Bibliography

K. Weltner, S. John, W. J. Weber, P. Schuster, J. Grosjean, Mathematics for Physicists and Engineers, Springer, 2014.

K. A. Stroud with D. J. Booth, Engineering Mathematics, 7th edition, Macmillan Education, 2013.

A. Croft, R. Davison, Mathematics for Engineers, 4th edition, Pearson Education, 2015.

Module 2: Physics		PHYENG
Duration	1 semester	
Study Semester	1st semester	
Frequency	Winter semester	
Recommended Prere-quisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture, Exercises	
Responsible for Module	Dr. rer. nat., Tandem-Professor Tobias Roth	
Teaching Personnel	Dr. rer. nat., Tandem-Professor Tobias Roth	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students can describe physical phenomena or experiments of the module content by the usage of a precise scientific language in its different representations (textual in words, pictorial in diagrams or symbolic with equations). Based on the acquired skills typical tasks in the context of application can be solved exploiting physical concepts, laws or a combination of them, and presenting results with the correct terms. Beyond that, students are able to model or assess unknown problems by approximation, simplification or reduction to the learned fundamental laws and relations.

2 Module Content and Course Schedule

The lecture deals with the basics of physics and gives an introduction to the fields mechanics and optics.

It includes the following topics:

- Scientific method (theory vs experiment), hypothesis (verification vs falsification)
- Physical constants and quantities (SI units, prefactors)
- Handling physical equations, representing data in diagrams and reading the out

Mechanics

- Newton's Laws (definition of momentum, force, acceleration)
- Laws of motion (linear motion, accelerated motion)
- Representation and superposition of forces (inclined throw, inclined plane)
- Friction
- Gravitational law and field (gravitational constant, g-factor, potential)
- Conservation of energy and momentum
- Definition of power
- Galilei (and Lorentz) transformation
- Centrifugal and Coriolis force
- Rotational Motion (torque, angular momentum)
- Rigid body (center of mass, moment of inertia, rotational energy)
- Spinning top, conservation of angular momentum
- Harmonic oscillation (differential equation), pendulum
- Damping and resonance

Optics

- Relation between speed of light, wavelength and frequency
- Standing waves, Doppler effect
- Fermat's principle
- Reflection and refraction (Snell's law)
- Prism dispersion and rainbow
- Lens grinder equation
- Imaging equation
- Optical instruments (human eye, thin and thick lenses, lens errors, telescopes)
- Huygen's principle
- Interference
- Diffraction (slit, double slit, grating)
- Description of electromagnetic waves
- Polarization (Brewster angle)
- Laser principle (optional)

Course Schedule

1. Physics as a natural science is introduced by a short historical classification and an overview over the state-of-the-art with its basic concepts. Physical quantities and units are defined.

2. Some fundamental laws of mechanics and optics (e.g. Newton's Axioms, laws of motion, Snell's law, imaging equation), as well as principles (energy and momentum conservation, Fermat, Huygens) are presented, and its far-reaching consequences are discussed.

3 Didactic Concept

The learning content is motivated by its relevance for practice, linked to the students everyday life or job-related topics in industries and science. The lecture integrates

formats to deliberately address the student's participation by activating problem solving competencies in exercises. Moreover, the lecture is accompanied by a tutorial.

4 Bibliography

- Raymond A. Serway, John W. Jewett, Jr.: Physics for Scientists and Engineers with Modern Physics, 9th Edition, Brooks/Cole
- Paul A. Tipler, Gene Mosca: Physics for Scientists and Engineers, W. H. Freemann (2007)
- Mathew Sands, Richard Feynman, Robert B. Leighton: The Feynman Lectures on Physics

Module 3: Fundamentals of Sustainable Business I		FUSBUS I
Duration	1 semester	
Study Semester	1st semester	
Frequency	Winter semester	
Recommended Prereq-uisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78 %	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture	
Responsible for Module	Prof. Dr. Christian Kammlott	
Teaching Personnel	Prof. Dr. Christian Kammlott, Prof. Dr. Klaus Helling	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1. Learning Goals

This module serves as a foundational course for the entire programme, establishing fundamental concepts essential to understanding sustainable business management. It provides students with a holistic perspective on the dynamic interplay between entrepreneurship and sustainability principles, serving as a cornerstone for learning about sustainable business management and equipping them with the essential knowledge and skills to navigate and succeed in today's complex business landscape.

Key Learning Objectives:

a) Understanding entrepreneurial value creation:
- Analyse the process of identifying and exploiting entrepreneurial opportunities.

- Evaluate different strategies for creating and capturing value in entrepreneurial ventures.
- Assess the role of innovation, creativity, and risk-taking in value creation.

b) Integrating sustainability into value creation:
- Exploring the concept of sustainability and its relevance in contemporary business environments.
- Examine how sustainable practices can enhance the resilience and longevity of entrepreneurial ventures.
- Identifying opportunities to align economic goals with social and environmental objectives based on the Sustainable Development Goals (SDGs) in connection with the Agenda 2030 framework.

c) Environmental and sustainable management:
- Recognise that long-term economic success requires consideration of environmental and social aspects.
- Understand that environmental management and sustainable management are essential to the long-term positive development of companies.
- Recognise the importance of efficiency, consistency, and sufficiency in sustainable management.
- Explain the principles and requirements of sustainable management with practical examples.
- Understand the requirements, benefits and costs of environmental management systems according to ISO 14001 and EMAS.

2. Module Content and Course Schedule

The course provides comprehensive insight into the intricate relationship between entrepreneurial value creation and sustainability principles. Participants will explore how innovative entrepreneurial ventures can generate value while integrating sustainable practices for long-term success through the following course outline:

a) Understanding the fundamentals of business

- Understanding market dynamics: From Need to Demand
- Value Creation and Business Model: Using the Business Model Canvas to design value propositions and learning to refine business models for optimal effectiveness
- Key Business Functions: Dive into the essential functions of entrepreneurial action: Understand modern strategic concepts, grasp the fundamentals of marketing and sales, gain initial insights into production and logistics.

b) Introduction to sustainable business and environmental management

- Understanding that long-term economic success requires consideration of environmental and social aspects.
- Environmental and sustainable management as crucial to the long-term positive development of companies.
- Principles and requirements of sustainable management with examples of how companies contribute to the SDGs.
- Requirements for environmental management systems according to ISO 14001 and the EMAS.
- Explain and assess opportunities and risks of environmental management systems based on current developments.

c) Wrap up and Summary

3. Didactic Concept

- The course consists of lectures and exercises
- Media-supported presentation
- Intensive use of media and current examples

4. Bibliography

Capaul, Roman / Steingruber, Daniel: Business Studies: An Introduction to the St. Gallen Management Model, Cornelsen

W. Chan Kim / Renée A. Mauborgne: Blue Ocean Strategy, Expanded Edition: How to Create Uncontested Market Space and Make the Competition Irrelevant

Alexander Osterwalder / Yves Pigneur: Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers

D'heur Michael (2015): Sustainable Value Chain Management, Springer

ISO 14001:2015 - Environmental management systems – Requirements with guidance for use, Beuth Verlag, Berlin 2015.

United Nations (2015): Resolution of the General Assembly, approved on September 25, 2015, URL: https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf

United Nations (without year): Sustainable Development Goals Knowledge Platform, URL: sustainabledevelopment.un.org

United Nations Development Program (without year): The UN SDG Action Campaign, URL: sdgactioncampaign.org

Module 4: Fundamentals of Accounting		FUACC
Duration	1 semester	
Study Semester	1st semester	
Frequency	Winter semester	
Recommended Prereq-uisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78 %	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture	
Responsible for Module	Prof. Dr. Johannes Wirth	
Teaching Personnel	Prof. Dr. Johannes Wirth, Kai-Heinrich Schlachter	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam (100%) ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1. Learning Goals

This module serves as a foundational course on the fundamental concepts that are essential for bookkeeping and accounting based on International Financial Reporting Standards (IFRS).

The course identifies and explains basic bookkeeping concepts, demonstrates the basic principles of accounting and the components of IFRS financial statements. It provides students with the essential knowledge and skills to prepare and analyse financial statements.

Key learning objectives:

a) Fundamentals of accounting and bookkeeping

- The fundamental concepts of accounting, and the various accounting conventions that apply these concepts
- The recording of basic transactions (bookkeeping) and the structure of the double-entry system and its application in different contexts
- Recording of transactions and preparing the trial balance
- Preparation of the statement of financial positions and income statement from the accounting records
- Being able to prepare simple financial statements from basic accounting records

b) Components and understanding of IFRS financial statements

- Benefits of a globally accepted accounting system
- Overview of the mandatory components of IFRS financial statements
- Structure of an IFRS income statement and the use of performance indicators
- Structure of an IFRS balance sheet and the use of financial stability indicators.
- Basic concept of the purpose and concept of consolidated financial statements.

2. Module content and timetable

The course is intended to introduce students to the basic concepts, methods and practices of accounting, and therefore students do not need any prior knowledge of the subject. The course provides comprehensive insight into the basic concepts, methods and applications of bookkeeping. Students will be able to understand the principles and apply the knowledge in the form of case studies by applying the underlying knowledge, methods and techniques developed.

a) Principles of accounting and bookkeeping

(i) Principles / basic accounting concepts
(ii) Processing accounting data
(iii) Preparation of financial statements

b) Components and understanding of IFRS financial statements

(i) Components and understanding of IFRS financial statements
(ii) Key ratios for assessing financial performance and stability

3. Didactic Concept

- The course consists of lectures and tutorials
- Media-supported presentation
- Intensive use of media and current examples
- Interactive bookkeeping tutorial

4. Bibliography

P. Atrill / E. McLaney (2022): Financial Accounting for Decision Makers, Harlow UK, 10. Edition

C. Berkau (2021): Basics of Accounting, UVK, 6. Edition.

Wiley (2023): Interpretation and Application of IFRS Standards.

Module 5: Intercultural Communication		INTCOM
Duration	1 semester	
Study Semester	1st semester	
Frequency	Winter semester	
Recommended Prereq-uisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78 %	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar, Project Workshop	
Responsible for Module	Prof. Dr. Stefan Diemer	
Teaching Personnel	Prof. Dr. Stefan Diemer, Dr. Marie-Louise Brunner, Tandem Professor	
Requirement for Awarding of ECTS Points	Passed module examinations	
Methods of Evaluation	☒ Written exam (50%) ☐ Oral exam ☐ Laboratory performance ☒ Project presentation (50%)	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1. Learning Goals

Students will gain key knowledge about cultural identities in order to be able to contextualise perspectives, viewpoints and expectations in a communicative context in a wide range of cultural and identity settings. They will be able to present and critically discuss key terms in intercultural communication and to apply the terminology in the analysis of practical examples of intercultural communicative events.

The exemplary discussion of barriers in intercultural communication will improve students' ability to recognise and understand potential obstacles and to develop and apply strategies to enhance communication across cultures (intra- and intercultural), particularly in professional settings.

On the basis of the knowledge acquired, students will be able to recognise structural specifics of other cultures on an individual, regional or global level. The application of the skills presented and practised in the course will enable students to successfully work successfully with people from other cultural contexts. Students will be able to anticipate and resolve interpersonal conflicts in order to successfully perform professional tasks in a wide range of personal and professional settings.

2. Module Content and Course Schedule

The seminar presents and discusses key terms and theories of intercultural communication such as culture, communication, identities, stereotypes, external perception, transnationality, politeness and hybridity. Recent research findings from applied and professional fields (business and economics, politics, international relations) serve to reflect and deepen participants' understanding of the complex context of both intra- and intercultural communication.

In the accompanying project workshop students apply the theoretical foundations to concrete settings building on their own experiences of difference in order to recognise and understand interactions in a context of different identities and cultures. Practical exercises such as simulations, role-plays and critical incidents illustrate various instances of intercultural communication and serve as the basis for the creation of individual communication portfolios.

Course Schedule

a) Fundamentals of language and intercultural communication

Overview of the key terms in intercultural communication and discussion of concepts such as culture, communication, context and power, identities and interculturality.

b) Verbal/non-verbal communication and culture

Introduction to linguacultures, transnationalities and the cultural dimensions of language, non-verbal communication aspects (emotion, action, space and silence), speech acts, facework and politeness.

c) Language, identity and intercultural communication

An overview of the influence of language, social background, gender and identity, and examples of cultural representation and othering, conflict contexts, intercultural contact, hybridity and third space.

d) Understanding intercultural transitions: from adjustment to acculturation

Focus on communication, adaptation and transformation, accommodation and contact in intergroup and intragroup settings.

e) Intercultural communicative competence

The role of language, understanding intercultural conflicts, the intercultural speaker and the acquisition of intercultural/global competence

f) Intercultural competence in a global context

English as a World Language and its role in a global environment, professional and workplace settings, legal contexts.

g) Aspects of intercultural management

Focus on working, interacting and managing across cultures

l) Critical incidents and role play

Workshop elements to enhance communicative competence and intercultural business and interaction competence.

3. Didactic Concept

- Lecture and interactive workshop elements
- Integration of web media
- Guest lectures and expert discussions
- Project workshops with international partners
- Cooperative sessions with blended learning elements
- Independent project work and portfolio design

4. Bibliography

Clyne, Michael (1996): Inter-cultural communication at work, Cambridge, Cambridge University Press.

Hofstede, Geert / Gert Jan Hofstede / Michael Minkov (2010): Cultures and organizations. New York: McGraw Hill.

Jackson, Kane (ed.) (2014): The Routledge Handbook of Language and Intercultural Communication. London: Routledge.

Lewis, Richard D (2006): When cultures collide. 3rd ed. Boston: Nicholas Brealey International.

Trompenaars, Fons / Charles Hampden-Turner (2012): Riding the waves of culture – Understanding diversity on global business. 3rd ed. Boston: Nicholas Brealey International.

Module 6: German I / Foreign Language / Elective	GFL I / ELEC
Duration	1 semester
Study Semester	1st semester
Frequency	Winter semester
Recommended Prereq-uisites	German: None / Foreign Language: See module description in the appendix.
Classification	☒ Required Course ☐ Compulsory Optional Subject
Credit Points	5
Weight of Grade	2.78 %
Contact Hours	4 SWS / 60 h
Self-Study	90 h
Total Workload	150 h
Course Language	German, French, Spanish, Italian etc. The modules "German I-V/ Foreign Language/ Elective" include the courses "German as a foreign Language I-V" for international students. For students whose native language is German and foreign students with proven German language skills, there are alternative options for taking other languages or electives from the compulsory elective module catalogue of this degree program. For GFL replacement courses students will have to select a total of five modules: a) either other foreign language courses offered in the UWUR department, including English for Special Purposes, French, Spanish etc.; b) Electives from the compulsory elective module catalogue of this degree program c) or other modules from other Bachelor courses of study in the UPUT or UWUR departments will count as "Electives (*Wahlpflichtmodule*)". For recognition of language certificates please contact the languages and communication section: sk@umwelt-campus.de before finalizing your study plan." A selection of possible language modules is attached in the appendix.
Type	Seminar
Responsible for Module	Prof. Dr. Stefan Diemer

Teaching Personnel	Christina Juen, Aloisia Sens and further lecturers	
Requirement for Awarding of ECTS Points	Passed module examinations	
Methods of Evaluation	☒ Written exam (50%) ☒ Oral exam (50%) ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1. Learning Goals German

The course aims to acquire and develop written and oral communication skills and is based on the Common European Framework of Reference for Languages (CEFR). On successful completion of the course, students will have language skills equivalent to level A1 of the CEFR.

2. Module Content and Course Schedule German

The course trains speaking, listening, writing and reading skills with the goal of achieving beginner (A1) language skills.

For a detailed description and a self-assessment grid of CEFR proficiency levels, see https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=090000168045bb52.

3. Didactic Concept German

- Primarily communicative teaching method
- Intensive media use (DVD: video sequences to start each unit, free app for smartphone supports self-study)
- Course media and handouts available online
- Communicative training (tasks and exercises for the basic skills reading, listening, speaking and writing; intercultural communication)

4. Bibliography German

The current list of German as a Foreign Language course books is available at https://www.umwelt-campus.de/en/campus/organisation/fachbereichuwur/sprache-kommunikation/student-info.

Module 7: Mathematics II		MATHENG II
Duration	1 semester	
Study Semester	2nd semester	
Frequency	Summer semester	
Recommended Prerequisites	Mathematics I	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture with integrated exercises	
Responsible for Module	Prof. Dr. Oliver Braun	
Teaching Personnel	Prof. Dr. Oliver Braun, Markus Barth	
Requirement for Awarding of ECTS Points	Passed module examination Passing an intermediate test is required for registering for the final exam.	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Discrete Mathematics: 1. Mathematical Reasoning: Students will understand mathematical reasoning in order to read, comprehend, and construct mathematical arguments. 2. Combinatorial Analysis: An important problem-solving skill is the ability to count or enumerate objects. The stress is on combinatorial analysis to solve counting problems and analyze algorithms, not applying formulae. 3. Discrete Structures: Students will learn how to work with discrete structures, which are the abstract mathematical structures used to represent objects and relationships between these objects. These discrete structures include sets, permutations, relations, graphs, and trees. 4. Algorithmic Thinking, Applications and Modeling: Some of the problems are solved by the specification, verification, and analysis of algorithms. Applications are important

uses of discrete mathematics and modeling with discrete mathematics is an extremely important problem-solving skill, which students have the opportunity to develop by constructing their own models in some of the exercises. In general, their ability in analytical thinking and working will be increased.

2 Module Content and Course Schedule

This course gives an introduction to basic methods of discrete mathematics. Topics include Counting, Discrete Probability, Graphs, Trees, Algorithms, and Linear Programming.

Course Schedule

1. Counting
2. Probability
3. Graphs
4. Algorithms
5. Linear Programming

3 Didactic Concept

Passing a written exam during the lecture period is required for registration for the final exam.

4 Bibliography

Kenneth H. Rosen: Discrete Mathematics and Its Applications, McGraw Hill, 7th Ed., 2007.

Module 8: Chemistry and Ecology		CHECO
Duration	1 semester	
Study Semester	2nd semester	
Frequency	Winter semester	
Recommended Prere-quisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture, Field Work	
Responsible for Module	Prof. Dr. Stefan Stoll	
Teaching Personnel	Prof. Dr. Stefan Stoll	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

The students learn about the functioning of important ecosystems. They have insight in basics of ecosystem theory and understand essential energy and matter cycles and the physico- and biochemical processes on which they are based. They know about the origin, distribution patterns and threat of biodiversity and know options for the protection of biodiversity and ecosystem functions.

2 Module Content and Course Schedule

This module covers basics in ecology and environmental sciences. The following topics will be covered:

- Important terrestrial, freshwater and marine ecosystems

- Ecosystem theory, ecosystem structure and dynamics
- Global carbon, nitrogen, and water cycle, including important physico- and biochemical processes on which they are based
- Global energy budget, climate and weather
- Ecosystem functions and services
- The origins of biodiversity, threats to biodiversity, and measures to protect biodiversity
- Basics in ecotoxicology

3 Didactic Concept

- Lecture
- Field Work

4 Bibliography

Begon, Harper, Townsend. Ecology: From Individuals to Ecosystems. Blackwell.

Darwin. On the origin of species. Oxford World´s Classics.

Walker, Sibly, Hopkin, Peakall. Principles of Ecotoxicology. Taylor & Francis.

Module 9: Thermodynamics		THERMO
Duration	1 semester	
Study Semester	2nd semester	
Frequency	Summer semester	
Recommended Prerequisites	Analysis, Physics	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture, Exercises	
Responsible for Module	Dr. rer. nat., Tandem-Professor Tobias Roth	
Teaching Personnel	Dr. rer. nat., Tandem-Professor Tobias Roth	
Requirement for Awarding of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students can describe thermodynamic phenomena or experiments of the module content by the usage of a precise scientific language in its different representations (textual in words, pictorial in diagrams or symbolic with equations). Based on the acquired skills typical tasks in the context of application can be solved exploiting thermodynamic concepts, laws or a combination of them, and presenting results with the correct terms. Beyond that, students are able to model or assess unknown problems by approximation, simplification or reduction to the learned fundamental laws and relations. More specifically, they can quantify thermal energy conversion in technical processes by means of a system abstraction and using suitable tools from thermodynamic modelling (balancing, state equations or material models).

2 Module Content and Course Schedule

The course teaches the basics of thermodynamics. For this purpose, macroscopic/empirical laws (ideal, real gas law) are introduced, starting from state variables. Using the concept of entropy, the Maxwell-Boltzmann velocity distribution and Planck's radiation law, the statistical nature of thermodynamics is introduced. In the context of the second fundamental law of thermodynamics technically relevant thermal cycles are described. In addition, phase transitions are covered.

- Introduction to thermodynamics (state variables, heat, internal energy)
- Definition of temperature and its measurement
- Linear expansion (Lennard-Jones potential)
- Calorimetry and heat capacity (Dewar vessel)
- Phase transition and phase diagrams (latent heat, fridge principle, memory alloys)
- Ideal gas model (standard conditions) versus real gas model
- Microscopic description (Maxwell-Boltzmann speed distribution)
- Climate change (thermodynamics of oceans and atmosphere)
- Mechanism of heat transfer (conduction, convection, radiation)
- Fundamental laws of thermodynamics (entropy)
- Thermodynamic cycles (Carnot process, heat pump, chiller, Diesel/Otto engine)

3 Didactic Concept

The learning content is motivated by its relevance for practice, linked to the students' everyday life or job-related topics in industries and science. The lecture integrates formats to deliberately address the student's participation by activating problem solving competencies in exercises. Moreover, the lecture is accompanied by a tutorial.

4 Bibliography

- Raymond A. Serway & John W. Jewett, Jr.: *Physics for Scientists and Engineers*. Brooks Cole Pub Co, 10th Edition (2018)
- Hugh D. Young & Roger A. Freedman: *University Physics with Modern Physics*. Pearson Education Limited, 15th Edition (2020)
- Paul A. Tipler & Gene Mosca: *Physics for Scientists and Engineers with Modern Physics*. W. H. Freeman, 6th Edition (2021)

Module 10: Principles of Engineering I		PRINENG I
Duration	1 semester	
Study Semester	2nd semester	
Frequency	Summer semester	
Recommended Prerequisites	Mathematics I, Physics	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture, Exercises	
Responsible for Module	Prof. Dr. Peter Gutheil, Prof. Dr. Thomas Preußler	
Teaching Personnel	Prof. Dr. Peter Gutheil, Prof. Dr. Thomas Preußler, Stefan Hirsch	
Requirement for Awarding of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

It is the goal of the lecture to learn the principles of Engineering. Students can understand and customize technical drawings and know basic contents of technical descriptions. The students know terms of forces and moments and understand the freeing principle. They can determine support reactions and inner forces by means of equilibrium conditions. The students know how to determine stresses in one-dimensional and plane state and the relation to corresponding strains.

2 Module Content and Course Schedule

The lecture deals with the principles of engineering. It includes the following topics:

- Technical drawings by means of computer aides methods
- DIN and other engineering standards
- Dimensioning and tolerances
- Forces and moments in the plane
- Freeing principle and balance of forces and moments
- Loads, reaction- and inner forces
- Normal-, shear- and equivalent stress
- Stress-strain relation and Hook's Law
- Strength and properties of materials

Course Schedule

1. Introduction on customizing technical drawings, dimensioning and tolerances.
2. Basic principles in static and mechanics of materials.
3. Calculation of forces and stress.

3 Didactic Concept

- Lectures
- Practices

4 Bibliography

Beitz, W. and K.-H. Küttner: Handbook of Mechanical Engineering, Springer

Hibbeler, R. C.: Engineering Mechanics – Statics, Pearson

Hibbeler, R. C.: Engineering Mechanics – Material Strength, Pearson

Hoischen, H.: Technisches Zeichen, Cornelsen

Module 11: Accounting		ACC
Duration	1 semester	
Study Semester	2nd semester	
Frequency	Summer semester	
Recommended Prere-quisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture	
Responsible for Module	Prof. Dr. Christian Kammlott	
Teaching Personnel	Prof. Dr. Johannes Wirth	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

The aim of this course is to provide students with an introduction to national and international financial reporting standards, and to develop a broad understanding of accounting processes, techniques, concepts and conventions and the relationships between the three financial statements. Students will also be introduced to some of the alternative technical methods and practices of accounting. At the end of the course, students will also be able to understand and prepare group accounts and get a brief introduction to management accounting.

2 Module Content and Course Schedule

The course is intended to measure and report the financial positions of an organization as well as the financial performance of an organization. Distinguishes between group

accounts and sole-trader accounts will be explained. At the end of the course, students will be introduced to Management Accounting, to provide an understanding to the role of management accounting in decision-making and managing an organization.

However, as accounting involves the manipulation of date expressed in numerical terms, students should have a basic grounding in mathematics.

By the end of the course, students should be in a position to understand:

- National and International Regulations of accounting
- International Financial Reporting Standards (IFRS, US-GAAP)
- Measuring and reporting the financial position of an organization
- Measuring and reporting the financial performance of an organization
- Preparation and interpretation of financial statements
- The analysis and interpretation of financial accounting information
- A broad range of accounting proceedings and accounting techniques, including international accounting principles and practices
- Basic issues relating to group accounting
- Introduction to Management Accounting

Course Schedule

1. National Regulation and International Financial Reporting Standards (IFRS)

Financial statements in Germany and other countries as well as Europe are regulated by various methods, including Company Law and Accounting standards. The need for regulation and the nature of the differences between the national regulatory systems in Germany and the International Financial Reporting Standards (IFRS, US-GAAP) will be considered.

2. Preparing Financial Statements

This session will focus on the three financial statements (Balance sheet, Income statement, Cash flow statement) and the links between them. It shows the main methods for preparing the statement of cash flows and the information that could be extracted over and above the information contained in the statement of financial position and the income statement. By the end of this session, students should be able to prepare the three financial statements.

3. Analyzing and interpreting financial statements

This chapter will provide an overview of the methods of analyzing and interpreting financial statements. It will look into how investors and others use financial statements and market information to assess the company´s investment potential (i. e. invest in, hold or sell the company´s shares).

4. Accounting proceedings I

This session enables students to understand and apply a range of accounting practices and techniques, including some of the alternative technical methods and practices of accounting (i. e. alternative recognition rules and valuation bases, adjustment of accounts for accruals, bad debts, bad debt provision and VAT).

5. Accounting proceedings II

In this Session, some of the problems with historical cost accounting in times of changing prices will be discussed and how they might be overcome. At the end of part I and II, students should be in a position to understand and apply a broad range of selected accounting proceedings and techniques based on alternative recognition rules, valuation bases and legal conventions.

6. Group Accounts

This session will look at accounting for groups of companies. Basic techniques for preparing group accounts will be introduced. Most large businesses (especially those listed on stock exchange) are groups. By the end of this session, students should be able to understand basic consolidation entries.

7. Introduction to Management Accounting

The introduction to Management Accounting develops the analytical skills and introduces techniques that accountants use to provide effective information to the management of an organization. This module enhances student skills in interpreting management accounting techniques and solutions.

3 Didactic Concept

- The course consists of lectures and exercises
- Media-supported presentation
- Media use and up-to-date examples

4 Bibliography

Brealey, R. / Myers, S. / Allen, F. (2016): Principles of Corporate Finance (12th ed.), McGraw-Hill.

Weygandt, Jerry J. / Kimmel, Paul D. / Kieso, Donald E. (2013): Accounting Principles, 11th Edition International Student Version.

Module 12: German II / Foreign Language / Elective	GFL II / ELEC
Duration	1 semester
Study Semester	2nd semester
Frequency	Summer semester
Recommended Prereq-uisites	German Language I / Foreign Language: See module de-scription in the appendix.
Classification	☒ Required Course ☐ Compulsory Optional Subject
Credit Points	5
Weight of Grade	2.78 %
Contact Hours	4 SWS / 60 h
Self-Study	90 h
Total Workload	150 h
Course Language	German, French, Spanish, Italian etc. The modules "German I-V/ Foreign Language/ Elective" include the courses "German as a foreign Language I-V" for international students. For students whose native language is German and foreign students with proven German language skills, there are alternative options for taking other languages or electives from the compulsory elective module catalogue of this degree program. For GFL replacement courses students will have to select a total of five modules: a) either other foreign language courses offered in the UWUR department, including English for Special Purposes, French, Spanish etc.; b) Electives from the compulsory elective module catalogue of this degree program c) or other modules from other Bachelor courses of study in the UPUT or UWUR departments will count as "Electives (*Wahlpflichtmodule*)". For recognition of language certificates please contact the languages and communication section: sk@umwelt-campus.de before finalizing your study plan." A selection of possible language modules is attached in the appendix.
Type	Seminar
Responsible for Module	Prof. Dr. Stefan Diemer

Teaching Personnel	Christina Juen, Aloisia Sens and further lecturers	
Requirement for Awarding of ECTS Points	Passed module examinations	
Methods of Evaluation	☒ Written exam (50%) ☒ Oral exam (50%) ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1. Learning Goals German

The course aims to acquire and develop written and oral communication skills and is based on the Common European Framework of Reference for Languages (CEFR). On successful completion of the course, students will have language skills equivalent to level A2 of the CEFR.

2. Module Content and Course Schedule German

The course trains speaking, listening, writing and reading skills with the goal of achieving elementary (A2) language skills.

For a detailed description and a self-assessment grid of CEFR proficiency levels, see https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=090000168045bb52.

3. Didactic Concept German

- Primarily communicative teaching method
- Intensive media use (DVD: video sequences to start each unit, free app for smartphone supports self-study)
- Course media and handouts available online
- Communicative training (tasks and exercises for the basic skills reading, listening, speaking and writing; intercultural communication)

4. Bibliography German

The current list of German as a Foreign Language course books is available at https://www.umwelt-campus.de/en/campus/organisation/fachbereichuwur/sprache-kommunikation/student-info.

Module 32: Principles of Engineering II		PRINENG II
Duration	1 semester	
Study Semester	3rd semester	
Frequency	Winter semester	
Recommended Prerequisites	Mathematics I, Physics, Principles of Engineering I	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture, Exercises	
Responsible for Module	Prof. Dr. Peter Gutheil	
Teaching Personnel	Prof. Dr. Peter Gutheil, Dr.-Ing. Lukas Lentz, Tandem-Professor, Stefan Hirsch	
Requirement for Awarding of ECTS Points	Passed module examination	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☒ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

The students can apply the principles of Engineering on simple structures such as rods and beams. Based on given loads, they can determine stresses and strains and transfer the knowledges on real applications. Students can understand technical systems and know basic methods to idealize machine elements and perform standardized dimensioning and analysis of machine elements. Furthermore, the students know the limits of dimensioning, strength and properties of materials and the basic definitions of static and dynamic load.

2 Module Content and Course Schedule

The lecture deals with the principles of Engineering. It includes the following topics:

- Basic load cases tension, pressure, bending and torsion
- Stress and strain on frames, rods, beams and shafts
- Smith Diagram
- Dynamic load, notch effect
- Design of machine elements
- Firmly bonded, form- and force-fitted bondings
- Bearings
- Screws and screw connections

Course Schedule

1. Basic principles in static and mechanics of materials.
2. Introduction to machine elements, basic principles and elements.
3. Design and analysis of machine elements.

3 Didactic Concept

- Lecture
- Practices

4 Bibliography

Beitz, W. and K.-H. Küttner: Handbook of Mechanical Engineering, Springer

Hibbeler, R. C.: Engineering Mechanics – Statics, Pearson

Hibbeler, R. C.: Engineering Mechanics – Material Strength, Pearson

Mott, R. L.: Machine Elements in Mechanical Design, 5th Edition, Pearson

Module 14: Information Technology		INFORTECH
Duration	1 semester	
Study Semester	3rd semester	
Frequency	Winter semester	
Recommended Prerequisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture, Tutorial	
Responsible for Module	Prof. Dr. Guido Dartmann, Prof. Dr. Peter Fischer-Stabel	
Teaching Personnel	Prof. Dr. Guido Dartmann, Prof. Dr. Peter Fischer-Stabel	
Requirement for Awarding of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

The students will learn methods and tools computer science. They will be able to develop simple algorithms, optimize processes, and compare different approaches. The goal is to develop competences to solve a typical problem of computer engineering.

2 Module Content and Course Schedule

Based on the fundamentals of computer science, a structured way of thinking and program development will be conveyed.

- Computer architecture and system software
- Algorithms (pseudo code, flow diagrams)
- Programming tools and languages

- Data types and expressions (program languages, especially Matlab)
- Modularization (procedures, functions, local variables, recursion)
- Computer Networts & Internet
- Security in IT-Applications
- Green IT

3 Didactic Concept

- Lecture
- Exercises

4 Bibliography

P. Fischer-Stabel, K. Gollmer (2016): Informatik für Ingenieure. Fit für das Internet der Dinge.- utb 4645, UKV/Lucius, München

Module 15: International Law and International Economic Policy		INLINEP
Duration	1 semester	
Study Semester	3rd semester	
Frequency	Winter semester	
Recommended Prerequisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture	
Responsible for Module	Prof. Dr. Georg Wenglorz, Prof. Reinhold Moser	
Teaching Personnel	Prof. Dr. Georg Wenglorz, Prof. Reinhold Moser	
Requirement for Awarding of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students will gain the capacity to recognize, analyse, evaluate and solve law-related problems occurring in daily life when doing business in resp. with an international company, especially in connection with international contracts as well as the resolution of an international dispute amongst companies. This includes an introduction and moreover an insight in several fields of law, amongst other things: International Private Law, UN Convention on the International Sale of Goods, International Law of Dispute Resolution, International Trade Law, International Procedural Law, International Product Liability Law etc. Those topics will be approached from the practical side; thus students will be guided through those fields of law on a case to case basis.

In the end of the course the students achieve a certain sensitivity which enables them to evaluate the legal risks going along with certain business actions resp. business

problems. The knowledge gained due to the course enables students to apply certain legal rules in situations they might be encountered with, especially in the field of international contracts resp. in international business and – moreover – to recognize when there is a need for a law specialist to assist them in solving the relevant problem. Additionally, students are enabled to analyze and evaluate the relevant legal risks before or when entering into a contract for a company.

Furthermore, finishing this course students have gained the capacity to recognize, analyze and evaluate occurring problems of European economic unification and international economic cooperation. They are able to meet their own judgement in relevant areas. Students achieve a certain sensitivity which enables them to evaluate the measures governments and international institutions meet. The knowledge gained due to the course enables students to apply it to occurring new items.

By the end of this course students are familiar with the economics of the EU integration as well as international economic cooperation, understand key steps in EU construction, key concepts in the current EU policies as well as the design of the institutions of international economic cooperation. Students are also able to analyze and assess developments within the European Union and the role of EU in the world. The aim of the course is to provide a institutional, theoretical and empirical framework to understand the economics and politics of the EU and institutions of international economic cooperation such as IMF, IBRD and WTO. Knowledge and capacity to understand the economic and the historical phenomena is provided.

The enhancement of communication skills related to the main topics of the course is also a main learning goal.

2 Module Content and Course Schedule

This course shall introduce the students to certain basic rules of international civil law, which is an enormously complex topic, as most countries in the world have their "own" international civil law. A main exception of this rule is the UN Convention on the International Sale of Goods (CISG), which is almost globally applicable (except for the UK). Additionally, certain parts of the international private law have been harmonized within the EU. Amongst other fields of law a brief introduction in basic principles of the following will be part of the lecture: (German) International Private Law, UN Convention on the International Sale of Goods, (German) International Trade Law, (German) International Product Liability Law, and International Law of Dispute Resolution.

We will collectively discuss cases, which touch the fields of law mentioned beforehand and will collectively and interactively solve the cases presented.

This course shall also introduce the students to certain basic principles of European unification and international economic cooperation. Amongst other fields a brief introduction in basic principles of international trade will be part of the lecture. We will collectively discuss current items in relevant areas.

While the course is not designed to focus on theory only, the basic theoretical frameworks is a prerequisite to qualified analysis and discussion. We emphasize the development of problem-solving skills based on a thorough understanding of the relevant theory. Because of the practical importance of the subject and as an illustration of the relevant theory, we will also discuss current issues and examples.

This is an introductory course into the economics and politics of the European Union and into the economics and politics of international economic integration. The course focuses on core economic issues behind the integration process on a European and on an international level.

Course Schedule

Part International Law

1. Introduction into International Law in general – What is "International Law"?
2. Introduction into International Civil Law – The difference between Civil and Public Law in the international perspective
3. International Private Law / Contracts – Basic Rules of International Private Law in Germany and the EU
4. International Trade Law – Basic Rules of International Trade Law in Germany and the EU as well as the INCOTERMS
5. International Product Lability Law - Basic Rules of International Trade Law in Germany and the EU
6. UN Convention of the International Sale of Goods – Rules of the so-called Vienna Convention of 1980
7. International Dispute Resolution / International Procedural Law

Part International Economic Policy

1. History of the European Unification

Setting out after 1945, this part outlines relevant stages of the process of European unification. Current turn moils and conflicts are also addressed. Besides the EU we will look at the Council of Europe and the European Economic Area.

2. Institutions of the European Union

This chapter depicts the most relevant institutions of the EU: European Parliament, European Commission, European Council, Council of Ministers, European Central Bank, selected European Agencies.

3. Selected Items in European Economic Policy

This part gives a description of selected areas out of fields such as: Fiscal Policy, Monetary Policy, Competition Policy, Industrial Relations, Environmental Policy, Consumer Protection.

4. History and Institutions of International Economic Cooperation

On the basis of introducing relevant institutions the history of international economic cooperation since World War II will be depicted: IMF, EBRD, WTO, OECD, UNCTAD etc.

5. Foundations of International Economic Cooperation

Students are given an outline of real and monetary trade theory in its principles; insofar they are relevant for the understanding of current real word problems.

6. Selected Policy Areas and Current Items of International Economic Cooperation

In this part, the following items will be discussed: trade in commodities (goods markets), trade in services, regulation of international capital flows and forms of monetary cooperation. Conflict resolving bodies.

3 Didactic Concept

- Interactive presentation of theoretical principles and – even more important – relating cases
- Media-supported presentation
- Students' homework as required preparation for class
- Up-to-date cases
- Tutorials and exercises
- Theoretical principles and up-to-date examples will be part of the course

4 Bibliography

Bernard, Catherine, The Substantive Law of the EU: The Four Freedoms, 5th ed., Oxford 2016

Carr, Indira/ Sundaram, Jae, International Trade Law, 5th ed., Oxford 2014

Dixon, Martin/ Mc Corquodale, Robert/ Williams, Sarah, Cases & Materials on International Law, 6th ed., New York 2016

Ghodoosi, Farshad, International Dispute Resolution and the Public Policy Exception, Oxford 2017

Paul Krugman, Maurice Obstfeld, Marc Melitz (2014). International Economics: Theory and Policy. 10th Edition. Prentice Hall

Richard Baldwin, Charles Wyplosz (2015). The Economics of European Integration. 5th Edition. Mcgraw-Hill Education Ltd

Schlechtriem, Peter/Butler, Petra, UN Law on International Sales, Heidelberg, 2009

Module 16: Scientific Methods and Concepts		SIMETCO
Duration	1 semester	
Study Semester	3rd semester	
Frequency	Winter semester	
Recommended Prerequisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture, Seminar	
Responsible for Module	Dr. Silvia De Magalhaes Carvalho	
Teaching Personnel	Dr. Silvia de Magalhaes Carvalho, Prof. Dr. Oliver Braun, and further lecturers with specific topics	
Requirement for Awarding of ECTS Points	Passed module examinations	
Methods of Evaluation	☒ Written exam (50%) ☐ Oral exam ☐ Laboratory performance ☒ Presentation (20%)	☐ Portfolio ☒ Writing tasks (30%) ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students learn the strict requirements of conducting research at the level of higher education, from the basic importance of checking the reliability of sources to appropriate advanced source-citation methods. They also learn guidelines for structuring written research, as well as relevant stylistic precepts of scientific writing which target the participant's development of a concise and mature style in the creation of academic reports, term papers and theses.

Upon successful completion of the course, students will have acquired the necessary tools to conduct appropriate scientific research. They will be able to independently formulate, elaborate on and write about a scientific problem and fulfill degree requirements in English. In addition, the essential skills acquired in the course prove of long-

term value for the participants' future careers as they result in an improvement in their capacity to communicate correctly, clearly, and objectively in writing.

Additionally, the course aims at developing specialized skills in oral communication, namely in the creation, structuring and delivery of keynote presentations. Upon completion of the program on keynote skills, students will have acquired the oral presentation skills necessary for preparing inspiring and motivating keynotes in their future professional lives. They will be able to present in a structured and competent manner and to convincingly defend their proposals or views in front of a professional audience. This is a skill which will, no doubt, provide them with a competitive advantage in their future business and/or technological careers .

2 Module Content and Course Schedule

In order to achieve the goals mentioned above, the course has been designed and planned in the following manner:

1) Basic guidelines for structuring a report/term paper/thesis: the constituent parts of scientific research writing.
2) General submission and paper format requirements of scientific research writing. General rules for presenting evidence in tables and figures.
3) Methods of Turabian or Chicago-style source citation. Due to the hybrid nature of the SBT program, which encompasses business management and technical subjects, the course focuses on the Turabian author-date style of citation applicable to both business and technical research. Alongside appropriate citation methods, this part of class includes a discussion of the different types of plagiarism and how to avoid them.
4) Stylistic precepts of scientific research writing: sentence form and paragraph form, choice of vocabulary, punctuation.
5) Oral communication skills: structure and delivery of professional keynote presentations. Creation of powerful electronic desktop presentations as visual complement.

3 Didactic Concept

Module 15 of the SBT program consists of a two-block course which encompasses 4 weekly hours. The module has been divided into the following distinct components:

1) **Block 1**: theoretical component in which the course material is covered.
2) **Block 2**: practical component in which participants carry out in-class practical work supervised by lecturer. Aim of this component is to apply the acquired theoretical knowledge in practice. Practical tasks include the reading and analysis of existing scientific work and the writing of samples to implement knowledge learned in Block 1.

Evaluation: Three evaluation criteria have to be fulfilled in order to successfully complete the course:

1) Submission of three samples of writing during the semester (tasks and deadlines to be specified by lecturer). 30% of final grade.
2) Group presentations (group formation, dates and topics determined by lecturer at the beginning of the term). 20% of final grade.
3) Final exam including theoretical material covered in class. 50% of final grade.

4 Course Bibliography

Consultation:

Turabian, Kate L. 2018. *A Manual for Writers of Research Papers, Theses, and Dissertations: Chicago Style for Students and Researchers*. 9th ed. University of Chicago Press.

Merriam-Webster Dictionary, merriam-webster.com.

Recommended Reading:

Glasman-Deal, Hilary. 2010. *Science Research Writing for Non-Native Speakers of English.* London: Imperial College Press**.**

Lipson, Charles. 2005. *How to Write a BA Thesis: A Practical Guide from Your First Ideas to Your Finished Paper*. University of Chicago Press.

Macgilchrist, Felicitas. 2014. *Academic Writing*. Paderborn: Verlag Ferdinand Schöning.

Powell, Mark. 2010. *Dynamic Presentations*. Cambridge University Press.

Reynolds, Garr. 2012. *Presentation Zen: Simple Ideas on Presentation Design and Delivery*. Berkely, CA: New Riders.

Skern, Tim. 2011. *Writing Scientific English: A Workbook*. 2nd ed. Vienna: Facultas WUV.

Wallwork, Adrian. 2016. *English for Writing Research Papers*. 2nd ed. Switzerland: Springer International Publishing.

Module 17: Corporate Finance		CORFIN
Duration	1 semester	
Study Semester	3rd semester	
Frequency	Winter semester	
Recommended Prere-quisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture	
Responsible for Module	Prof. Dr. Christian Kammlott	
Teaching Personnel	Kai-Heinrich Schlachter	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students will gain first insights to the importance in financial decision making as well as respective models concerning the firms' capital structure. The course should give students the capacity to understand the theory of modern corporate finance. They will become familiar and be able to differentiate the different types of funding and financing instruments. On that basis, they will be able to determine the specific financing needs of a company, with the aim to secure the financial balance and to minimize the cost of financing. The knowledge should be applied in practical situations using the techniques that have been developed in corporate finance. Furthermore, students should obtain a qualified opinion in current debates on issues of corporate finance and understand the current scientific debate in this field.

2 Module Content and Course Schedule

This course gives an introduction to the basic principles of modern corporate finance from the perspective of financial managers who are responsible for making significant investment and financing decisions.

Topics covered include the concept of net present value, basic methods for optimal decision making, also under the presence of economic uncertainty as well as strategic concerns. Also, an introductory overview of financial markets and financial instruments used by market participants will be provided. Furthermore, it will be discussed how investment and financing decisions interact to affect the value of the firm.

While the course is not designed to focus on abstraction only, the basic theoretical frameworks of the aforementioned topics are a prerequisite to qualified analysis and intellectual discussion. We emphasize the development of problem-solving skills based on a good understanding of the business environment. Because of the practical importance of the material and as an illustration of the relevant theory, we will discuss examples and cases.

Course Schedule

1. The role of corporate finance and the goal of the firm

Introduction to financial management as a function in the value chain and its goals. In traditional corporate finance, the main objective in decision making is to maximize the value of the firm. It will be shown how this fits into sustainable management.

2. Time value of money

Understand the concept of time value of money (TVM), which is the idea that money available at present is worth more than the same amount in the future.

3. Risk and return

The risk-return trade-off is the principle that potential return rises with an increase in risk. During the course, this core principle will be discussed and explained.

4. Sources of Capital (equity, debt, mezzanine, alternatives)

Choosing the right sources of capital is a key decision that will significantly influence a company. Starting from generate money by selling part of the company in the form of shares to investors, which is known as equity funding up to borrowing money from banks or publicly through a debt issue – there is a broad range of sources for companies in different stages of their lifecycle and risk levels.

5. Capital budgeting and decision making tools and processes

Once projects have been identified, finance managers have to determine whether the project should be pursued from a financial perspective. There are common capital budgeting decision tools such as are the payback period, net present value (NPV) method and the internal rate of return (IRR) method that are addressed in this chapter.

6. Introduction to the Capital Market Theory

Capital markets are supposed to be the lifeblood of capitalism. Companies turn to them to raise funds needed to finance their needs. The course gives a first insight into the groundwork of capital market theory (portfolio selection) as a model that describes the relationship between risk and expected return and that is used in the pricing of risky securities.

3 Didactic Concept

- The course consists of lectures and exercises

- Media-supported presentation
- Course media and handouts available online
- Intensive media use and up-to-date examples

4 Bibliography

Brealey R. and Myers S. and Allen F., Principles of Corporate Finance (12th ed.), McGraw-Hill, (2016), latest edition.

Module 18: German III / Foreign Language / Elective	GFL III / ELEC
Duration	1 semester
Study Semester	3rd semester
Frequency	Winter semester
Recommended Prereq-uisites	German I – II / Foreign Language: See module description in the appendix.
Classification	☒ Required Course ☐ Compulsory Optional Subject
Credit Points	5
Weight of Grade	2.78 %
Contact Hours	4 SWS / 60 h
Self-Study	90 h
Total Workload	150 h
Course Language	German, French, Spanish, Italian etc. The modules "German I-V/ Foreign Language/ Elective" include the courses "German as a foreign Language I-V" for international students. For students whose native language is German and foreign students with proven German language skills, there are alternative options for taking other languages or electives from the compulsory elective module catalogue of this degree program. For GFL replacement courses students will have to select a total of five modules: a) either other foreign language courses offered in the UWUR department, including English for Special Purposes, French, Spanish etc.; b) Electives from the compulsory elective module catalogue of this degree program c) or other modules from other Bachelor courses of study in the UPUT or UWUR departments will count as "Electives (*Wahlpflichtmodule*)". For recognition of language certificates please contact the languages and communication section: sk@umwelt-campus.de before finalizing your study plan." A selection of possible language modules is attached in the appendix.
Type	Seminar
Responsible for Module	Prof. Dr. Stefan Diemer

Teaching Personnel	Christina Juen, Aloisia Sens and further lecturers	
Requirement for Awarding of ECTS Points	Passed module examinations	
Methods of Evaluation	☒ Written exam (50%) ☒ Oral exam (50%) ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1. Learning Goals German

The course aims to acquire and develop written and oral communication skills and is based on the Common European Framework of Reference for Languages (CEFR). On successful completion of the course, students will have language skills equivalent to level B1 of the CEFR.

2. Module Content and Course Schedule German

The course trains speaking, listening, writing and reading skills with the goal of achieving intermediate (B1) language skills.

For a detailed description and a self-assessment grid of CEFR proficiency levels, see https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=090000168045bb52.

3. Didactic Concept German

- Primarily communicative teaching method
- Intensive media use (DVD: video sequences to start each unit, free app for smartphone supports self-study)
- Course media and handouts available online
- Communicative training (tasks and exercises for the basic skills reading, listening, speaking and writing; intercultural communication)

4. Bibliography German

The current list of German as a Foreign Language course books is available at https://www.umwelt-campus.de/en/campus/organisation/fachbereichuwur/sprache-kommunikation/student-info.

Module 19: Sustainable Waste and Waste Water Treatment Technologies		SUWA
Duration	1 semester	
Study Semester	4th semester	
Frequency	Summer semester	
Recommended Prerequisites	Chemistry and Ecology	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar	
Responsible for Module	Prof. Dr.-Ing. Susanne Hartard	
Teaching Personnel	Prof. Dr.-Ing. Susanne Hartard	
Requirement for Awarding of ECTS Points	Passed module examinations	
Methods of Evaluation	☒ Written exam (60%) ☐ Oral exam ☐ Laboratory performance ☒ Project presentation (40%)	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students have an excellent overview of sustainable technical solutions in Circular Economy. They can transfer Best Practice Waste Management concepts to their home country and can calculate Waste Value Flows. They know sustainability parameters for Technology Assessment like recovery rate, energy intensity and output quality values.

The students know the innovative technical paths of Circular Water Systems and Eco Sanitation (state of the art). Beside general knowledge of standard steps of waste water treatment alternatives they can categorize the most important recent developments in sustainable wastewater management like energy autarkic WWT plants and

nutrients recovery (Nitrogen, Phosphorus). They have thoroughly examined the technical challenges of the future, such as filtering microplastics and chemical residues in wastewater through the fourth treatment stage.

After completing the course, the students are able to deal scientifically with a topic and can independently develop well-founded solutions as well as present and defend them in front of an audience.

2 Module Content and Course Schedule

The module contains in the first part an introduction to the treatment technologies for waste reduction and recycling in Circular Economy. This includes the basic and the deepening knowledge on the

- classification of waste
- waste value separation technologies
- recycling center potentials and recycling technologies
- mechanical-biological treatment (MBT)
- thermal treatment and energy recovery (waste-to-energy) and
- elements of a sanitary landfill for climate protection.

The module in the second part contains an introduction to the basic understanding of waste water treatment (WWT) steps. The deepening lecture will give students a knowledge on innovative paths in WWT like phosphorus & nitrogen recovery, energy autarkic systems and plastic filters) The students will visit and discuss selected pilot projects like a vacuum waste water system of a student house (excursion), a wood-chip based Zero Emission power plant, rainwater collection systems and N/P recovery plants in Germany.

3 Didactic Concept

Seminar-like lessons with impulse-presentations, excursions (recycling station, wood-chip incineration plant, vacuum sanitation system) and group work on a waste management project in a developing country presented by the students at the end of the semester term.

4 Bibliography

Bilitewski, B.; Härdtle, G.; Marek, K.; Weissbach, A.; Boeddicker, H. (2010)

Waste Management. Springer.

Bonn, Victor (Ed.) (2016) Waste Management. CLANRYE INTL.

Mackenzie, Leo Davis (author) (2010): Water and Wastewater Engineering. McGraw-Hill Education.

Schaum, Christian (Ed.) (2018) Phosphorus: Polluter and Resource of the Future: Removal and Recovery from Wastewater (Integrated Environmental Technology).

Worrell, E. (2014) Handbook of Recycling: State-of-the-art for Practitioners, Analysts, and Scientists. Elsevier Ltd, Oxford.

Additional references will be given by the lecture notes on StudIP.

Module 20: Sustainable Energy Systems		SUENSY
Duration	1 semester	
Study Semester	4th semester	
Frequency	Summer semester	
Recommended Prere-quisites	Physics and Thermodynamics	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar	
Responsible for Module	Prof. Dr. Henrik te Heesen	
Teaching Personnel	Joachim Brinkmann, M. Sc.	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam (75%) ☐ Oral exam ☐ Laboratory performance ☒ Presentation (25%)	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students have acquired basic knowledge of the energy sector. The students are able to apply the acquired knowledge with regard to current approaches in energy technology.

2 Module Content and Course Schedule

The module contains an introduction to the topic of energy. This includes units, forms of energy and basic concepts such as primary energy and the distinction between fossil and renewable sources of energy. These include the residential sector (building energy technology) as well as electricity generation and distribution and transport technology. The lecture considers current approaches in energy technology, in particular:

- Energy demand, generation, and transportation
- Fossil energy systems
- Renewable energy systems
- Heat demand
- Transportation
- Sector coupling
- Climate change
- Energy hub concepts

3 Didactic Concept

Seminar-like lessons with exercises.

4 Bibliography

Volker Quaschning. Understanding renewable energy systems. Earthscan/ Routledge London. 2016.

Additional references will be given during the course

Module 21: Lab Work		LABO
Duration	1 semester	
Study Semester	4th semester	
Frequency	Summer semester	
Recommended Prerequisites	Physics, Chemistry and Ecology, Principles of Engineering 1, Thermodynamics	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture, Laboratory practicals	
Responsible for Module	Prof. Dr. Stefan Stoll	
Teaching Personnel	Prof. Dr. Stefan Stoll and further lecturers for specific labs	
Requirement for Awarding of ECTS Points	Passed module examinations	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☒ Laboratory performance (60%) ☐ Project presentation	☐ Portfolio ☒ Term paper or essay (40%) ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students have gained knowledge in experimental design, formulation of scientific hypotheses, execution of scientific experiments and test series and documentation of data and results.

Students have the capacity to present and discuss and contextualize scientific results.

They have acquired the fundamentals of a good laboratory practice including laboratory safety.

Students can differentiate between scientific and unscientific approaches to gain knowledge.

2 Module Content and Course Schedule

On completion of this module students will have:

Undertaken advanced experimental laboratory work, with due attention to laboratory safety;

Manipulated advanced apparatuses;

Recorded and documented scientific data;

Analyzed scientific data to test scientific hypotheses;

Practiced their ability to write clear, scientific reports;

Developed their practical and problem-solving skills.

Students will choose four experiments of interest from a semester catalogue of experiments.

3 Didactic Concept

- Lecture
- Lab practicals

4 Bibliography

Turabian, K.L. (2018) A manual for writers of research papers, theses, and dissertations. 9th ed. The University of Chicago Press. USA.

Module 22: Manufacturing Technology		MANUTEC
Duration	1 semester	
Study Semester	4th semester	
Frequency	Summer semester	
Recommended Prerequisites	Principles of Engineering I	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture, Excursions	
Responsible for Module	Prof. Dr.-Ing. Peter Gutheil	
Teaching Personnel	Prof. Dr.-Ing. Peter Gutheil and further lecturers with specific topics	
Requirement for Awarding of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

The goal of the lecture is to acquire basic knowledge about manufacturing processes. Students learn to understand the basic and some special manufacturing processes and their position within the production process. They understand the meaning of energy consumption and material use in industrial processes and are able to think about solutions for sustainable processes. The students get a basic understanding how industrial production works and get an appropriate toolkit to look on production processes with focus on economic and ecological aspects.

2 Module Content and Course Schedule

The lecture deals with the principles of manufacturing processes. It includes the following topics:

- Basic types of manufacturing processes
- Organization of production manufacturing types
- Special manufacturing processes and applications
- Clean production

3 Didactic Concept

- Lectures
- Guest lectures
- Samples and videos
- Study trips (optional)

4 Bibliography

Beitz, Wolfgang; Handbook of mechanical engineering / Dubbel; Springer

Module 23: Cleaner Production and Operations Management		CLEANPROM
Duration	1 semester	
Study Semester	4th semester	
Frequency	Summer semester	
Recommended Prere-quisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture	
Responsible for Module	Prof. Dr. Klaus Helling	
Teaching Personnel	Prof. Dr. Klaus Helling	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

The goal of the lecture is to acquire basic knowledge about production processes. Students learn to understand the organization of production processes and their position within the supply chain.

They understand the meaning of energy consumption and material use in industrial processes and are able to think about solutions for sustainable processes.

The students get a basic understanding on how to analyze industry relations alongside their horizontal and vertical value-chains and get an appropriate toolkit to measure and monitor the results based on economic and ecological aspects.

2 Module Content and Course Schedule

The lecture deals with the principles of production processes, operation management and globalized supply chains. It includes the following topics:

- Operations Management
- Supply Chain Management
- Industrial Material Flow Management
- Cleaner Production
- Lean Production

3 Didactic Concept

- Lectures
- Study trips

4 Bibliography

Brophy, A.: Guide to Lean: How to streamline your organisation, engage employees and create a competitive edge (Financial Times Guides), 2012

Goetschalckx, Marc.; Supply Chain Engineering; Springer

Helling, K. (2006): Principles of Industrial Material Management, Birkenfeld

Wagner, B. / Enzler, S. (2006): Material Flow Management Improving Cost Efficiency and Environmental Performance, Heidelberg

WBCSD (Ed.): The Eco-Efficiency Learning Module, 2006.

www.cleaner-production.de

Module 24: German IV / Foreign Language / Elective	GFL IV / ELEC
Duration	1 semester
Study Semester	4th semester
Frequency	Summer semester
Recommended Prereq-uisites	German I – III / Foreign Language: See module description in the appendix.
Classification	☒ Required Course ☐ Compulsory Optional Subject
Credit Points	5
Weight of Grade	2.78 %
Contact Hours	4 SWS / 60 h
Self-Study	90 h
Total Workload	150 h
Course Language	German, French, Spanish, Italian etc. The modules "German I-V/ Foreign Language/ Elective" include the courses "German as a foreign Language I-V" for international students. For students whose native language is German and foreign students with proven German language skills, there are alternative options for taking other languages or electives from the compulsory elective module catalogue of this degree program. For GFL replacement courses students will have to select a total of five modules: a) either other foreign language courses offered in the UWUR department, including English for Special Purposes, French, Spanish etc.; b) Electives from the compulsory elective module catalogue of this degree program c) or other modules from other Bachelor courses of study in the UPUT or UWUR departments will count as "Electives (*Wahlpflichtmodule*)". For recognition of language certificates please contact the languages and communication section: sk@umwelt-campus.de before finalizing your study plan." A selection of possible language modules is attached in the appendix.
Type	Seminar
Responsible for Module	Prof. Dr. Stefan Diemer

Teaching Personnel	Christina Juen, Aloisia Sens and further lecturers	
Requirement for Awarding of ECTS Points	Passed module examination(s)	
Methods of Evaluation	☒ Written exam (50%) ☒ Oral exam (50%) ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1. Learning Goals German

The course aims to acquire and develop written and oral communication skills and is based on the Common European Framework of Reference for Languages (CEFR). On successful completion of the course, students will have language skills equivalent to level B2 of the CEFR.

2. Module Content and Course Schedule German

The course trains speaking, listening, writing and reading skills with the goal of achieving upper intermediate (B2) language skills.

For a detailed description and a self-assessment grid of CEFR proficiency levels, see https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=090000168045bb52.

3. Didactic Concept German

- Primarily communicative teaching method
- Intensive media use (DVD: video sequences to start each unit, free app for smartphone supports self-study), German news sequences, songs, etc.)
- Course media and handouts available online
- Communicative training (reading, listening, speaking and writing; intercultural communication)

4. Bibliography German

The current list of German as a Foreign Language course books is available at https://www.umwelt-campus.de/en/campus/organisation/fachbereichuwur/sprache-kommunikation/student-info.

Module 25: Ethics and Society		ETHSO
Duration	1 semester	
Study Semester	5th semester	
Frequency	Winter semester	
Recommended Prerequisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture, Project Workshop	
Responsible for Module	Prof. Dr. Milena Valeva, Prof. Dr. Stefan Diemer	
Teaching Personnel	Prof. Dr. Milena Valeva, Dr. Silvia De Magalhaes Carvalho	
Requirement for Awarding of ECTS Points	Passed module examinations	
Methods of Evaluation	☒ Written exam (50%) ☐ Oral exam ☐ Laboratory performance ☒ Project presentation (17%)	☐ Portfolio ☒ Term paper or essay (33%) ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students will identify and comprehend the importance of sustainable corporate governance and responsible management of persisting and often conflicting goals in modern enterprises.

The participants are enabled to apply tools that support ethical uncritical management for the harmonization of antagonistic targets with an emphasis on employee motivation inside realistic organizational behavior. Besides, they learn how to steer, manage and communicate sustainable entrepreneurial decisions, achievements and long-range product policy aspects including public interests to support an authentic social and environmental friendly governance.

Students will internalize essentials and instruments of modern sustainability management, ethical HR aspects and designing a culture of responsibility underlining ethically uncritical and legal compliant decision making regarding diverging and interlacing stakeholder interests.

En passant the students will apprehend and transfer classical ethical knowledge and moral insights of famous philosophers to up-to-date business ethics in a globalized world. A special focus will also include the issues of corporate psychopaths and ethical leadership.

In the workshop component, students will gain key knowledge about international business communication principles in order to be able to contextualize their economic performance in a wide range of societal and international interactional settings. They will be able to present and critically discuss key means of international business communication and to analyze the respective societal backgrounds influencing business interaction.

The exemplary discussion of the various ways in which societies shape economic interaction, will enable students to perform an ethics-based evaluation of the pros and cons of different market environments, particularly in the context of issues such as sustainability, globalization and the digital economy.

On the basis of the acquired knowledge, students will be able to perform business decisions in an international context and in a wide range of professional communicative settings.

2 Module Content and Course Schedule

The course explains the need for modern ethical correct business modeling and sustainable management in companies in all major functional and managerial fields. Practical real business exercises as well as virtual examples set students more and more into a manager role as decision maker or project leader. They identify the parallels between classical and business ethics and realize the positive outcome.

Learning more about classical ethically desired and accepted behavior the participants understand how to change todays established often-misleading production ways and rigid treatment of employees to a business that reduces systematically negative impacts.

The accompanying workshop on international business communication presents the pragmatic aspects of management decisions based on culture-specific and global normative settings and expectation frameworks. This includes basic intercultural mediation, in particular the effect of language use and pragmatics on economic interaction (Linguistic Awareness of Cultures).

On the basis of case studies students will look at problems and challenges in the areas of intercultural marketing, marketing to heterogeneous target groups, regional marketing styles, online business communication and adaptive customer communication as well as the use of social network and data mining to enhance business communication. As part of the workshop students will discuss ethical and societal aspects, dealing with issues such as diversity management, company cultures, time and hierarchical models and decision patterns, in an applied context.

Course Schedule

Lecture part:

1. Intro: need for change in markets and models through globalization, increasing profit and image risks for enterprises in case of unethical behaviour/mismanagement, role of today's mass communication and social media, effects of resource

shortages for own production/biodiversity aspects, need for sustainable management to fight upcoming dark development curves reg. increasing environmental and social problems.
2. Insight: differentiation of classical scientific resp. normative ethics vs. business ethics, practical and future oriented decision making in enterprises, positive productivity and turnover effects through normative management with a "moral compass". Profiling of corporate psychopaths and ethical leadership approaches do map the field of ethically based HR & organizations management. Subordination of various ‚classical' needs for a future worth living, introducing corrective management systems to motivate the employees for sustainability.
3. Tools: St. Gallen Management Model, Blue Ocean Strategies, financial disasters through ignorance of business ethics resp. sust. aspects, SDGs & Value Orientation in Organizations, cooperation with non-governmental organizations, effective conducted international management standards
4. Integration: examples for value chain oriented integrated ethical uncritical management: procurement, production, research, sales & marketing, transformation and professional change, technology and innovation policy
5. Summary: Positive experiences and best management practice support, comparison of approach between global players/multinationals and small/medium sized enterprises

Note: prominent current business examples accompany all lecture modules

Workshop part:

1. Intro: Linguistic Awareness of Cultures
2. Cultural and societal settings and normative frameworks, guest lectures on various applied problems and their solutions
3. Ethics and societies: different market models, diversity management, company cultures, time and hierarchical models and decision patterns
4. Intercultural marketing: Examples for approaches, case studies and discussion of adaptation in a globalized setting
5. The digital economy: Digital value chains, Compilation and transformation of data, tailored services, applications and products in retail, manufacturing, creative, educational and public sectors

Summary: Business decisions and ethics in an international communicative setting

3 Didactic Concept

- Impulse lectures incl. analysis of best practice and current state of research examples, discursive interactive approach
- Practical exercises, dialog oriented team presentations
- Cooperative sessions with blended learning elements
- All course media and materials available online, integration of web media
- Workshop elements with international partners
- Guest lectures and expert talks
- Independent project work and portfolio design

4 Bibliography

English

C. Boddy (2011): Corporate Psychopaths, Palgrave Macmillan UK.

A. Crane / D. Matten (2016): Managing Corporate Citizenship and Sustainability in the Age of Globalization, Oxford University Press.

A. Crane / D. Matten (2010): Business Ethics, Oxford University Press.

K. Gibson (2007): Ethics and Business: An Introduction, Cambridge.
R.R. Sims (2003): Why Giants Fall – Ethics and Corporate Social Responsibility.
Harvard Business Review on Corporate Ethics, (introductive literature).
K. Meyer / M.W. Peng (2016): International business.
D. Mendez (2017): The culture solution.
C. Storti (2017): The art of doing business across cultures.
L. Ciochetto (2014): Globalisation and advertising in emerging economies.
S. Liu / Z. Volcic / C. Gallois (2014): Introducing intercultural communication.
D.L. Rogers (2016): The digital transformation playbook.
German
Hentze J. Thies B. (2012): Unternehmensethik und Nachhaltigkeitsmanagement, Bern

Module 26/27/30/31: Elective	ELEC
Duration	1 semester
Study Semester	5th semester / 6th semester
Frequency	Winter semester / summer semester
Recommended Prere-quisites	None
Classification	☐ Required Course ☒ Compulsory Optional Subject
Credit Points	5
Weight of Grade	2.78%
Contact Hours	4 SWS / 60 h
Self-Study	90 h
Total Workload	150 h
Course Language	English / German
Type	Seminar
Responsible for Module	Lecturers according the selected seminar
Teaching Personnel	Lecturers according the selected seminar
Requirement for Award-ing of ECTS Points	Passed module examination according the selected semi-nar
Methods of Evaluation	Methods of Evaluation according the selected seminar

Important Information

Modules 25, 26, 29 and 30 are to be selected from the elective module catalog for the degree program regulated by these regulations. The catalog of compulsory elective modules is determined and published by the head of the study program. This may be updated on a semester-by-semester basis. You can find the latest overviews of the elective courses on the website "Info for the current semester".

Moreover, students can choose from all 4 SWS modules that are offered in each of the Bachelor programs at the Umwelt-Campus Birkenfeld, allowing them to explore subjects outside their area of study.

Please note that the following modules cannot be considered as an "Elective":

- Zweite Fremdsprache
- Fachsprache Englisch
- Business Englisch
- Sprachen I
- Sprachen II

- Sprachen III
- WUR in der 1. Fremdsprache
- WUR in der 2. Fremdsprache

1 Learning Goals

Published in the respective module description of the chosen seminar.

2 Module Content and Course Schedule

Published in the respective module description of the chosen seminar.

3 Didactic Concept

Published in the respective module description of the chosen seminar.

4 Bibliography

Published in the respective module description of the chosen seminar.

Module 28: Interdisciplinary Project	INTERPRO
Duration	1 semester
Study Semester	5th semester
Frequency	Winter semester
Recommended Prere-quisites	Scientific Methods and Concepts
Classification	☒ Required Course ☐ Compulsory Optional Subject
Credit Points	10 (5+5)
Weight of Grade	5.56% (2.78% + 2.78%)
Contact Hours	8 SWS / 120 h (4 SWS / 60 h + 4 SWS / 60 h)
Self-Study	180 h (90 h + 90 h)
Total Workload	300 h (150 h + 150 h)
Course Language	English
Type	Project
Responsible for Module	Current Program Coordinator
Teaching Personnel	Lecturers according the selected topics
Requirement for Award-ing of ECTS Points	Passed module examination according the selected semi-nar
Methods of Evaluation (depends on course structure to be defined by lecturer)	Methods of Evaluation according the selected seminar

1 Learning Goals

The student knows the different practice-oriented and/or theory-oriented techniques and methods for the independent and systematic implementation of research and development tasks. The student is able to handle problems widely autonomously by applying scientific methods and abilities. Another important qualification goal is the ability to work constructively and under pressure within a team.

2 Module Content and Course Schedule

The module is usually carried out through two projects, each carrying 5 ECTS. It is also possible to group this module into a large project with a scope of 10 ECTS. It is welcomed when the module is realized in the form of teamwork, but individual work is

also possible. The specific time and content must be clarified bilaterally with the supervising professor. In principle, it is also possible to complete the module in several semesters.

The module should impart scientific methodology and abilities under the guidance of a professor. A more complex and interdisciplinary work with relation to the degree course will be accomplished. Application-oriented problems will be worked on under supervision in such a way that the student is able to learn generic techniques and methods which are needed for a later independent implementation of research and development works. There is the possibility to work on a project with external partners from institutes, universities or industry. The module may also be covered by the technical projects ("Fachprojekt" and "Interdisziplinäres Projekt") practiced regularly in Department UP/UT faculty, as well as in cooperation with students of other programs.

3 Didactic Concept

- Group Work
- Project Work

4 Bibliography

According the selected topics.

Module 30: German V / Foreign Language / Elective	GFL V / ELEC
Duration	1 semester
Study Semester	5th semester
Frequency	Winter semester
Recommended Prereq-uisites	German Language I – IV / Foreign Language: See module description in the appendix.
Classification	☒ Required Course ☐ Compulsory Optional Subject
Credit Points	5
Weight of Grade	2.78 %
Contact Hours	4 SWS / 60 h
Self-Study	90 h
Total Workload	150 h
Course Language	German, French, Spanish, Italian etc. The modules "German I-V/ Foreign Language/ Elective" include the courses "German as a foreign Language I-V" for international students. For students whose native language is German and foreign students with proven German language skills, there are alternative options for taking other languages or electives from the compulsory elective module catalogue of this degree program. For GFL replacement courses students will have to select a total of five modules: a) either other foreign language courses offered in the UWUR department, including English for Special Purposes, French, Spanish etc.; b) Electives from the compulsory elective module catalogue of this degree program c) or other modules from other Bachelor courses of study in the UPUT or UWUR departments will count as "Electives (*Wahlpflichtmodule*)". For recognition of language certificates please contact the languages and communication section: sk@umwelt-campus.de before finalizing your study plan." A selection of possible language modules is attached in the appendix.
Type	Seminar
Responsible for Module	Prof. Dr. Stefan Diemer

Teaching Personnel	Christina Juen, Aloisia Sens and further lecturers	
Requirement for Awarding of ECTS Points	Passed module examinations	
Methods of Evaluation	☒ Written exam (50%) ☒ Oral exam (50%) ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1. Learning Goals

The course is aimed at acquiring and developing written and oral communication skills and is guided by the requirements of the Common European Framework of Reference for Languages (CEFR). After passing this course successfully, participants with passing grade 4,0 to 2,3 will have language skills according to level B2 CEFR, participants with passing grade 2,0 to 1,0 will have language skills according to level C1 CEFR.

2. Module Content and Course Schedule

The course trains speaking, listening, writing and reading skills with the goal achieving at least upper intermediate (B2) and at best effective operational proficiency (C1) language skills.

For a detailed description and a self-assessment grid of CEFR proficiency levels, see https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=090000168045bb52.

3. Didactic Concept

- Primarily communicative teaching method
- Intensive media use (DVD: video sequences to start each unit, free app for smartphone supports self-study), German news sequences, texts from German newspapers on the environment/sustainability) etc.)
- Course media and handouts available online
- Communicative training (reading, listening, speaking and writing; intercultural communication)

4. Bibliography

The current list of German as a Foreign Language course books is available at https://www.umwelt-campus.de/campus/organisation/fachbereichuwur/sprache-kommunikation/student-info/.

Module 32: Career Planning and Employability		CAPLAEM
Duration	1 semester	
Study Semester	6th semester	
Frequency	Summer semester	
Recommended Prerequisites	None	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar	
Responsible for Module	Prof. Dr. Stefan Diemer	
Teaching Personnel	Prof. Dr. Stefan Diemer and further lecturers with specific talks	
Requirement for Awarding of ECTS Points	Passed module examination	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☒ Career Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

A student passing this module can:

1. Critically reflect on experiences in the workplace drawing upon appropriate material for the analysis of these experiences
2. Compare, contrast and evaluate different placement/work experiences in national and international settings
3. Critically analyze philosophical, ethical and moral issues in the workplace in relation to professional practice drawing upon the significance of personal values in relation to this area

4. Evaluate their own knowledge, skills (including soft skills) and attributes and use these to develop an action plan to meet career aspirations

2 Module Content

The aim of this module is to prepare students for national and international employment by providing knowledge and understanding of the increasing importance of critical reflection and continuous professional development in the early stages of managing a graduate career. It is designed to build upon work experiences including an analysis of critical incidents and an evaluation of the skills and attitudes required for effective working and career progression related to their field of employment. Consideration will also be given to training needs, staff and professional development, how this can be planned and supported. Particular emphasis will be given to how students can confidently and articulately promote themselves to potential employers.

The module further focuses on possible Master programs as an alternative for students who want to continue studying:

- Consecutive Master program: meaning that they deepen one's knowledge acquired in a bachelor program in the same discipline
- Non-consecutive Master program: meaning they do not build on a specific bachelor's degree
- Continuing education: meaning they require one or more years of professional experience for admission

Course Schedule

1. Students will critically appraise their placement experiences at two levels, namely at an individual level in relation to their personal development and career aspirations and, at a global industry level, with a particular focus on the relationship between theory and industrial/commercial practice.
2. The module provides a learning environment in which students have the opportunity to develop and evaluate theories of professionalism, emotional intelligence, competency and employability in a variety of contexts.
3. Students will develop their skills in critical reflection and career management in order that they may become more effective practitioners in the early stages of a graduate career.

The focus throughout is on enhancing students' potential to gain a graduate job upon completion of their degree course

3 Didactic Concept

- Lecture and interactive workshop elements
- Integration of web media
- Guest lectures and expert talks
- Project workshops with international partners
- Cooperative sessions with blended learning elements
- Independent project work and portfolio design

4 Bibliography

The current list of course books is available at https://www.umwelt-campus.de/en/campus/organisation/fachbereichuwur/sprache-kommunikation/student-info.

Module 33: Thesis (12 ECTS) and Colloquium (3 ECTS)		
Duration	1 semester	
Study Semester	6th semester	
Frequency	Winter and summer semester	
Prerequisites	See the Examination Regulations (FachPO): Prerequisites for admission to the Bachelor Thesis Successful participation in the Flying Days Event	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	15	
Weight of Grade	8.33% (Bachelor Thesis: 6.67%, Colloquium 1.67%)	
Contact Hours	12 SWS / 180 h	
Self-Study	270 h	
Total Workload	450 h	
Course Language	English	
Type	Bachelor Thesis, Colloquium	
Responsible for Module	Prof. Dr. Christian Kammlott (Current Program Coordinator)	
Teaching Personnel	Examiner, Second Examiner	
Requirement for Awarding of ECTS Points	Passed module examination(s)	
Methods of Evaluation	☒ Bachelor Thesis ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☒ Colloquium

1 Learning Goals

By successfully completing the module, students have demonstrated that they are able to independently work on a specialized problem using scientific methods within a given period of time. They have a broad and integrated knowledge, including the scientific foundations and a critical understanding of the most important theories and methods.

The students can apply the knowledge, skills and methods acquired during their studies to problems and, in addition, to independently add relevant content, evaluate it

and interpret it scientifically. They derive on this basis and formulate a solution for the specialist problem that corresponds to the state of the art in science.

Furthermore, the students are able to defend the results of their thesis and present their results to the audience in an appropriate form. They can justify their approach and assess how assumptions and simplifications affect the validity of their results. Students have the ability to analyze questions about their work and results and answer them appropriately in the context of the profession.

2 Module Content and Course Schedule

The Bachelor Thesis can be practical as well as theoretical. It should relate the advanced standard of knowledge in the scientific field and normally deal with potential problems in the working life. The Bachelor Thesis consists of the written work and its defense.

3 Bibliography

Anglia Ruskin University Library. Guide to Harvard style of referencing. Available at: http://libweb.anglia.ac.uk/referencing/files/Harvard_referencing_2016.pdf [Accessed 24 February 2017]

Birmingham City University (2015). How to write references. Available at: http://library.bcu.ac.uk/references.pdf [Accessed 24 February 2017]

Turabian, K.L. (2013): A manual for writers of research papers, theses, and dissertations: Chicago style for students and researchers. University of Chicago Press

Specific Electives

Specific "Elective" modules (Modules 25, 26, 29 and 30) for are to be selected from the elective module catalog for the degree program regulated by these regulations. The catalog of compulsory elective modules is determined and published by the head of the study program. This may be updated on a semester-by-semester basis. You can find the latest overviews of the elective courses on the website "Info for the current semester".

A selection of possible modules is attached below:

Electives - Winter semester

Energy Informatics	
Duration	1 semester
Study Semester	5th semester
Frequency	Winter semester
Recommended Prerequisites	None
Classification	☐ Required Course ☒ Compulsory Optional Subject
Credit Points	5
Weight of Grade	2.78%
Contact Hours	4 SWS / 60 h
Self-Study	90 h
Total Workload	150 h
Course Language	English
Type	Seminar, Project Workshop
Responsible for Module	Prof. Dr. Henrik te Heesen
Teaching Personnel	Prof. Dr. Henrik te Heesen
Requirement for Awarding of ECTS Points	Grade and credit points are awarded based on portfolio examination. The portfolio examination consists of tests accompanying the course and a programming project at the end. The tests are smaller programming tasks graded as "pass/fail". At least 75 percent of the tasks must be passed to complete the programming project.

	The programming project is a task in which the students must apply what they have learned to a problem in the field of energy technology. For this purpose, a program is developed independently, including the programming concepts learned for this purpose.	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☒ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

The module is designed to provide students with advanced knowledge of the structure of today's energy systems, as well as a basic understanding of how to translate energy economics tasks into a digital representation.

Upon completion of this module, students will understand the subject matter and a wealth of skills, such as the ability to further develop solutions to energy management problems, effectively communicate results derived from energy models, and capture and parameterize the generation and consumption systems within a given region in digital form. In addition, students will become familiar with implementing power system modeling scripts, applying power system optimization algorithms, and visualizing power systems and energy flows through various means. This hands-on learning approach will equip students with the skills necessary to solve real-world problems in the energy industry.

Recommendation for attendance:

- Basic knowledge of computer science (for example, through a course "Informatics for Engineers" or "Computer Science for Industrial Engineers").
- Basic knowledge of power engineering
- In addition, a basic interest in solving energy engineering problems with the help of IT is required.

2 Module Content and Course Schedule

To be able to model, simulate and optimize energy systems considering volatile, renewable energy sources, the generation and consumption systems in a region must be digitally recorded and parameterized so that, among other things, conclusions can be drawn from this system regarding potential for energy savings as well as forecasts for future development. For this purpose, the students will work on the following points:

- Introduction to basic control structures
- Basics of procedural and object-oriented programming
- Building a database structure
- Programming of scripts for modeling the energy system
- Visualization of energy data
- Coding rules and documentation of source code

The programming content is applied to energy engineering problems. The programming language is Python.

3 Didactic Concept

Seminar with exercises

The concept of the teaching form is "Flipped Classroom": The students acquire the content basics through guided self-study, the attendance time is used for the joint processing of assignments.

4 Bibliography

R. Zahoransky. Power engineering. Springer-Verlag

Educational videos on power engineering

Educational videos and online tutorials for the introduction to Python and databases (SLQ).

Further literature will be announced during the course

Environmental Monitoring		
Duration	1 semester	
Study Semester	5th semester	
Frequency	Winter semester	
Recommended Prere-quisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture, Exercises, Excursions	
Responsible for Module	Prof. Dr. Stefan Stoll	
Teaching Personnel	Prof. Dr. Stefan Stoll	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students learn about the objectives and selected methods of environmental monitor-ing. They will be able to plan and implement monitoring concepts to inform about specific environmental structures and processes, manage monitoring data, perform simple statistical evaluations and present monitoring results adequately.

2 Module Content and Course Schedule

This course teaches the planning and implementation of environmental monitoring measures. The data collected will be documented and subjected to statistical analyses.

Course Schedule

1. Actors and objectives in environmental monitoring

2. Characteristics of physical, chemical and biological measurands
3. Environmental indicators
4. Socio-economic assessments and ecosystem services
5. Development of monitoring concepts
6. Field and laboratory exercises on selected monitoring methods
7. Data and Metadata Management
8. Basic statistical analysis techniques
9. Presentation and communication of monitoring results

3 Didactic Concept

- Lecture and interactive workshop elements
- Integration of web media
- Independent project work and portfolio design

4 Bibliography

Müller et al. (Hrsg.), 2010, Long-Term Ecological Research - Between Theory and Application. Springer-Verlag, Heidelberg.

Meier et al., 2006, Methodisches Handbuch Fließgewässerbewertung (http://www.fliessgewaesserbewertung.de/download/handbuch/).

Haase et al, 2016, The value of long-term ecosystem research (LTER): Addressing global change ecology using site-based data. Ecological Indicators 65 (special issue): 1-160.

Management of Non-Governmental Organizations		
Duration	1 semester	
Study Semester	5th semester	
Frequency	Winter semester	
Recommended Prere-quisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar	
Responsible for Module	Prof. Dr. Milena Valeva	
Teaching Personnel	Prof. Dr. Milena Valeva	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☒ Project presentation	☐ Portfolio ☒ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

This course offers an overview of the diffuse and challenging field of the third sector – Non-Governmental Organizations (NGOs). Within this module students will reflect on the status-quo of NGOs and learn about chosen tools for managing NGOs. Additionally, they will interpret the given and potential development of particular NGOs via case studies and oral presentations.

2 Module Content and Course Schedule

Course Schedule

Session 1: introduction & course overview

Session 2. Governmental Organizations (GOs) versus Non-Governmental Organizations (NGOs) versus Profit-Organizations
Session 3: NGOs – historical background
Session 4-5: NGOs – mapping the field
Session 6-8: NGO-Management
Session 9-10: NGOs: Trends & Case Studies
Session 11-13: discussions with the teams and coaching
Session 14: course summary

3 Didactic Concept

- course sessions at 180 minutes each
- seminar format: lecture, discussion, coaching
- media-supported presentations
- moderated discussions
- work in class
- work in groups

4 Bibliography

Anheier, H. (2005). Nonprofit Organizations. Theory, management, policy, Routledge, London and New York.

Sachin Ch. Et. Al. (2021). The Palgrave Handbook of Development Cooperation for Achieving the 2030 Agenda, Palgrave Publisher. https://doi.org/10.1007/978-3-030-57938-8.

Nikolas S., Dwayne R.M. (2022). Non-state Actors in the Arctic Region. Springer Cham. https://doi.org/10.1007/978-3-031-12459-4.

Md. Nurul Momen, Rajendra Baikady, Cheng Sheng Li, M. Basavaraj (2020). Building Sustainable Communities. Palgrave Macmillan Singapore. https://doi.org/10.1007/978-981-15-2393-9.

Battilana, J., Kimsey, M. (2017). Should You Agitate, Innovate, or Orchestrate? In: Stanford Social Innovation Review (website) | September 18, 2017.

Brown, M. (2020). Unpacking the Theory of Change. In: Stanford Social Innovation Review, Fall 2020, p. 43-50.

Sumar, F., & Gingerich, T. (2020). The Future of Humanitarian Action is local. In: Stanford Social Innovation Review, Spring 2020, p. 40-47.

Additional literature as online and offline sources of information is supplied during the course.

Recycling Technologies in Circular Economy		
Duration	1 semester	
Study Semester	5th semester	
frequency	Winter semester	
Recommended Prere-quisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar	
Responsible for Module	Prof. Dr. Susanne Hartard	
Teaching Personnel	Prof. Dr. Susanne Hartard, Anne Mich	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☒ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students will expand their knowledge in the field of Circular Economy especially sorting and recycling technologies for different waste value fractions like plastic, textiles, construction waste, electronic waste and others. Students will gain the necessary skills to analyze the sustainability contribution of recycling, to compare different technologies by ecological and economic criteria. They will be able to understand the range between low-tech solutions to high tech investments. They will be aware of innovative recycling trends.

2 Module Content and Course Schedule

Module Content

Based on real case studies of best practice and pilot plants in Germany the state of the art is first presented. The technologies presented will be discussed in the seminar with regard to their required input material quality and output fractions (recyclables) and their quality assurance for the secondary raw materials market. Technology assessment methods (LCA, CF) are used to compare recycling technologies in terms of their sustainability contribution.

Course Schedule

The course will be scheduled in weekly sessions. Efforts will be made to online and physical visit of sorting and/or recycling facilities.

3 Didactic Concept

The seminar includes lecture components, film-based demonstrations of recycling plants, group work on sustainability assessment, self-study phases and an excursion.

4 Bibliography

Khan, Anish; Inamuddin, Abdullah; M. Asiri. (Ed.) (2020) E-waste Recycling and Management [eBook]: Present Scenarios and Environmental Issues / SpringerLink (Online service) Cham: Springer International Publishing.

Jyothi, Rajesh Kumar (Ed) (2020) Rare-Earth Metal Recovery for Green Technologies. Methods and Applications. Springer.

Rudolph, Natalie; Kiesel, Rhaphael, Aumnate, Chuanchom (2017) Understanding plastics recycling: economic, ecological, and technical aspects of plastic waste handling /München; Cincinnati: Hanser.

Worrell, Ernst (2014) Handbook for Recycling: State-of-the-art for Practitioners, Analysts and Scientists. Elsevier, Oxford.
Ernst Worrell and Markus A. Reuter: Handbook of Recycling. State-of-the-art for Practitioners, Analysts, and Scientists. eBook.

Additional online materials.

Remote Sensing		
Duration	1 semester	
Study Semester	5th semester	
Frequency	Winter semester	
Recommended Prere-quisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar, Practicals	
Responsible for Module	Prof. Dr. Peter Fischer-Stabel	
Teaching Personnel	Prof. Dr. Peter Fischer-Stabel	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☒ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students will gain key knowledge in remote sensing technologies. They will be able to analyze various types of remotely sensed data (e. g. optical, radar, lidar etc.), to define appropriate algorithms, and to critically discuss the quality of the results of their analyses.

On the basis of the acquired knowledge, students will be able to recognize the benefits remotely sensed data have, especially with view to the recent discussion addressing hot topics such as climate change, loss in biodiversity, natural and technological disaster or atmospheric pollution, to name but a few. On the other hand, the students will be able to deal with the limits of remote sensing technologies compared to In-Situ-Methods.

2 Module Content and Course Schedule

The seminar presents and discusses key terms and theories of remote sensing technologies and applications.

Within the accompanying practicals the participants will learn methods, tools and operational systems mainly in the context of environmental monitoring. They will be able to develop simple algorithms in image processing, to extract feature based information at the earth surface. In addition, an overview of data providers, related web services and high-level-products is given.

Course Schedule

1. The what, why and how of remote sensing
2. Geospatial reference systems
3. Multispectral and radar systems
4. Lidar and Sonar systems
5. Digital image processing and analysis
6. Common applications in environmental monitoring

3 Didactic Concept

- Lecture and interactive workshop elements
- Integration of web media
- Practicals using up-to-date/global space-based data and open source software

4 Bibliography

Lillesand T., R. Kiefer, J. Chipman (2015): Remote Sensing and Image Interpretation.- 7th Edition, Wiley & Sons

Maguire, Goodchild, Rhind (2005): Geographical Information Systems and Science.- John Wiley & Sons, New York.

Social Media & Crisis Communication		
Duration	1 semester	
Study Semester	5th semester	
Frequency	Winter semester	
Recommended Prerequisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar	
Responsible for Module	Prof. Dr. Stefan Diemer	
Teaching Personnel	Prof. Dr. Stefan Diemer, Dr. Marie-Louise Brunner	
Requirement for Awarding of ECTS Points	Passed module examinations	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☒ Project presentation (50%)	☒ Portfolio (50%) ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students will expand their knowledge in the field of social media and crisis communication and develop the ability to classify, analyze, optimize, and develop different digital media channels in terms of language, content, and economic use as well as webcare/crisis potential. Students will also gain the necessary skills to analyze and evaluate general marketing and customer interaction strategies as well as webcare and crisis discourse in social media environments, and to present them to a critical audience. Participants will work with existing datasets and also compile own analyses of existing data for their own case studies.

2 Module Content and Course Schedule

Module Content

Based on current case studies and examples, the seminar deals with in-depth aspects of social media communication and webcare in low-stakes (customer interaction) and high-stakes (crisis) contexts. The course discusses authentic and media-appropriate communication, social media strategies of customer relationship management, multimodal marketing methods, the negotiation of brand identities, and strategies to avoid and moderate social media crises. A key area of interest is webcare, advertising and crisis discourse in social media environments, such as Instagram, Facebook, TikTok, and Twitter. Participants will work with existing datasets and also compile own analyses of existing data for their own case studies.

Course Schedule

The course will be scheduled in weekly or bi-weekly sessions with project phases.

3 Didactic Concept

The seminar includes lecture components, presentations, group and project work, and self-study phases. Grades will be allocated on the basis of a graded e-portfolio and an ungraded presentation of a self-compiled case study. The portfolio consists of the summary of the results of a case study on social media and crisis communication. The ungraded presentation should last ca. 20-30 minutes and will take place during the semester.

4 Bibliography

Brunner, Marie-Louise; and Stefan Diemer. 2019. Meaning negotiation and customer engagement in a digital BELF setting: A study of Instagram company interactions. Iperstoria – Testi Letterature Linguaggi 13(1): 15-33 [Special section: Negotiating Meaning in Business English as a Lingua Franca, ed. by Alessia Cogo and Paola Vettorel]. https://iperstoria.it/article/view/436.

Coombs, Timothy. 2007. Crisis Management and Communications. *Institute for Public Relations*.

Coombs, Timothy; and Sherry Holladay. 2006. Unpacking the Halo Effect: Reputation and Crisis Management. *Journal of Communication Management* 10(2): 123-137.

De Fina, Anna. 2016. Storytelling and audience reactions in social media. Language in Society 45: 473-498.

Van Noort, Guda; and Lotte Willemsen. 2011. Online Damage Control: The Effects of Proactive Versus Reactive Webcare Interventions in Consumer-generated and Brand-generated Platforms. *Journal of Interactive Marketing* 26: 131-140.

Van Noort, Guda; Lotte Willemse; Peter Kerkhof; and Joost Verhoeven. 2014. Webcare as an integrative tool for customer care, reputation management, and online marketing: A literature review. In: Philip J. Kitchen & Ebru Uzunoglu (eds.), *Integrated Communications in the Post-Modern Era*, p. 77-99. Basingstoke (UK): Palgrave-Macmillan.

Zhang, Yi; and Camilla Vásquez. 2014. Hotels' responses to online reviews: Managing consumer dissatisfaction. *Discourse, Context and Media* 6: 54-64.

Additional online materials.

Sustainable Conflict Resolution		
Duration	1 semester	
Study Semester	5th semester	
Frequency	Winter semester	
Recommended Prerequisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar, Project Workshop	
Responsible for Module	Prof. Dr. Kathrin Nitschmann	
Teaching Personnel	Prof. Dr. Kathrin Nitschmann	
Requirement for Awarding of ECTS Points	Passed module examinations	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☒ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

The students will gain knowledge about sustainable dispute resolution strategies and restorative justice in different cultural contexts and expand knowledge about the relationship of sustainability strategies and law and about the analysis of legal textual genres and legal thinking. They will become familiar with recognized alternatives of dispute resolution and their importance for sustainable decision finding within communities. They will understand the implementation of these alternatives into legal systems as part of the necessary framework for the implementation of sustainable strategies.

The students understand and contextualize relevant dispute solution strategies and their connection with law in order to apply them to selected case studies and law pro-

jects and to discuss them critically. The acquired knowledge will enable the participants to assess and evaluate and solve conflicts in context with sustainable development from a legal perspective but also from alternative perspectives.

2 Module Content and Course Schedule

The seminar presents and discusses conflicts against the background of international and national development of sustainability strategies and implemented legal procedures. The difficulty of sustainable decision finding and restorative justice by formal legal procedures is examined. Respective knowledge about relevant European and German legal norms and legal principles as well as about alternative dispute resolution strategies such as mediation, arbitration, negotiation will be transmitted and serves to enhance students' understanding of decision taking in different social fields. In case studies students apply their knowledge in a practice-orientated and comparative way and present the results.

Course Schedule

1. Sustainable decision taking through formal legal procedures
    a. Global perspective
    b. European perspective
    c. German perspective
2. The role of Courts in conflict resolution
3. Negotiation Strategies
4. Mediation
5. Arbitration
6. Restorative Justice

3 Didactic Concept

- Lecture and interactive workshop elements
- Integration of web media
- Guest lectures and expert talks
- Independent case studies and presentations

4 Bibliography

Dernbach, J. / Mintz, J.A. (2011): Environmental Laws and Sustainability: An Introduction, Sustainability, 3, p. 531-540.

Mauerhofer, V./Rupo, D./Tarquinio, L. (editors) (2020), Sustainability and law. General and Specific Aspects, Springer

Electives - Summer Semester

Digitalisation		
Duration	1 semester	
Study Semester	6th semester	
Frequency	Summer semester	
Recommended Prere-quisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar	
Responsible for Module	Prof. Dr. Stefan Diemer	
Teaching Personnel	Prof. Dr. Stefan Diemer, Marie-Louise Brunner, M.A.	
Requirement for Award-ing of ECTS Points	Passed module examinations	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☒ Project presentation (50%)	☒ Portfolio (50%) ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students will expand their knowledge in the field of digitalization and develop the abil-ity to classify, analyze, optimize and develop different digital digital media channels in terms of language, content, and economic use. Students will also gain the necessary skills to analyze and evaluate digital business models, with a particular focus on digital communication in an intercultural context, and present them to a critical audience.

2 Module Content and Course Schedule

Module Content

Based on current case studies, the seminar deals with in-depth aspects of digitalization in national, international, and intercultural contexts, such as development or adaptation of digital business models, addressing digital content to heterogeneous target groups, digital business and customer communication, and companies' economic perspectives in a global digital context. An additional focus will be new trends and opportunities in the digital economy.

Course Schedule

The course will be scheduled in weekly or bi-weekly sessions with project phases.

3 Didactic Concept

The seminar includes lecture components, presentations, group and project work, presentations and self-study phases.

4 Bibliography

Kecskes, Istvan. 2014. Intercultural Pragmatics. Oxford: Oxford University Press.

Dark Horse Innovation. 2016. Digital Innovation Playbook. Murmann.

Herring, S., Stein, D. and Virtanen, T. eds., 2013. Pragmatics of computer-mediated communication. Walter de Gruyter.

Matzler, K., 2016. Digital Disruption. Vahlen.

Rogers, David L. 2016. Digital Transformation Playbook. New York: Columbia Business School.

Additional online materials.

Disaster Risk Reduction DDR		
Duration	1 semester	
Study Semester	6th semester	
Frequency	summer semester	
Recommended Prere-quisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar and practicals, block course	
Responsible for Module	Prof. Dr. Peter Fischer-Stabel	
Teaching Personnel	Prof. Dr. Peter Fischer-Stabel et al.	
Requirement for Award-ing of ECTS Points	Passed module examinations	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☒ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Disasters are complex phenomena which increasingly tackle our daily lives now and in the future. Thus, it becomes more and more important to have well-informed and trained people to mitigate the social, infrastructural, and economic challenges due to disaster risk.

Therefore, the Students will gain key knowledge in Disaster Risk Reduction concepts. They will be able to understand the full disaster risk management cycle (Prevention, Mitigation, Preparedness, Response, Recovery) and in addition, they will be able to analyze weak points in the preparedness regarding to natural disasters.

Based on the acquired knowledge, students will be able to recognize the benefits of sophisticated DRR concepts, especially with view to the recent discussion addressing hot topics such as climate change and natural disasters, to name but a few.

2 Module Content and Course Schedule

The module presents and discusses the key terms and theories of recent disaster risk reduction concepts. Within the accompanying practicals, the participants will learn methods, tools and operational systems in application in the field of disaster risk reduction and public risk awareness.

Based on the practicals, they will be able to apply participatory methods of risk sensitization concepts. In addition, an overview of key players in the field of DRR in Germany and Europe is given.

Course Schedule

7. The Disaster Risk Management Cycle
8. Risk communication and strategic management
9. Regional consequences of climate change
10. Operative risk management: Responsiveness in case of an emergency
11. Information and warning systems
12. Risk sensitization
13. Excursions to areas affected by natural disasters

3 Didactic Concept

- Lecture and interactive workshop elements
- Integration of web media
- Excursions to affected sites
- Practicals using serious games and participatory methods

4 Bibliography

Birkmann, Jörn (2010): First and second-order adaption to natural hazards and extreme events in the context of climate change.- Springer Science+Business Media B.V. 2011, DOI 10.1007/s11069-011-9806-8

Pelling, Marc (2011): Adaption to climate change: From resilience to transformation.- Taylor & Francis, New York

Wisner, B., Blaikie, P., Cannon, T. & Davis, I. (2003): At risk. Natural hazards, peoples vulnerability and disasters.- 2nd Edition, UNDP

Further information on recently published online and offline sources is supplied during the course.

Environmental Policy		
Duration	1 semester	
Study Semester	6th semester	
Frequency	Summer semester	
Recommended Prere-quisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture	
Responsible for Module	Prof. Dr. Dirk Löhr	
Teaching Personnel	Prof. Dr. Dirk Löhr	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students will gain key knowledge about the basic concepts in discussion and the actors and patterns of environmental politics in Germany and other countries. They will be able to critically discuss key issues in environmental policy and to apply the concepts in the analysis of the contemporary discussion.

2 Module Content and Course Schedule

The topics are not limited only to the narrow field of environmental policy, but refer also to other fields of sustainability.

The course

- Gives and overview about the political system in Germany and the EU;

- Discusses the political actors and their role in the political process;
- Illustrates how environmental laws are made;
- Shows the different views on regulatory policy;
- Presents the most important instruments of environmental instruments;

Moreover,

- Principals and instruments of environmental policy;
- The role of the Tinbergen rule in environmental policy;
- Their impacts on property rights and distribution are discussed.

The following items are fixed contents of the course:

- Distributional aspects of environmental taxes and pollution permits; with the application fields climate protection and land use;
- Sustainable public finance;
- Sustainable infrastructure (with a special regard on traffic);
- International trade.

Additionally, present topics of public interest shall be discussed if required.

Course Schedule

1. Political System
   Overview of the way the political system and the law making works
2. Market failure and state failure
   … are analyzed in terms of externalities and processes of rent seeking activities as well as lobbyism.
3. Regulatory policy (Freiburg School)
   The role of regulatory policy within sustainability and the standpoints of different political and pressure groups are discussed.
4. Environmental policy, land and nature
   The role of land and nature as factors of production is analyzed, the impacts of different property rights are debated.
5. Agriculture policy
   In particular the EU agricultural policy is critically presented.
6. Tinbergen Rule
   The role of the Tinbergen rule is discussed on the background of the example of environmental taxes. Also the Henry George principle will be an issue.
7. Sustainable infrastructure
   In particular, the role of pricing and financing infrastructure is analyzed.
8. International trade and foreign direct investments
   The sustainability aspects of globalization are reflected.

3 Didactic Concept

- Lecture and interactive workshop elements
- Integration of web media
- Guest lectures and expert talks

4 Bibliography

Steven Cohen (2006): Understanding Environmental Policy. New York: Columbia University Press.

Dirk Loehr (2010): External Costs as Driving Forces of Land Use Changes. Sustainability 2(4): 1-19. Online: https://www.researchgate.net/publication/227439200_External_Costs_as_Driving_Forces_of_Land_Use_Changes

Carolyn Snell (2014): The short guide to environmental policy (Short Guides), Policy Press

Ethical and Legal Aspects of Artificial Intelligence		
Duration	1 semester	
Study Semester	6th semester	
Frequency	Summer semester	
Recommended Prere-quisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	Same as credit points	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar, Project Workshop	
Responsible for Module	Prof. Dr. Maximilian Wanderwitz	
Teaching Personnel	Prof. Dr. Maximilian Wanderwitz	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☐ Written exam ☒ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

The students have an overview of the complex structure that has arisen through the development and widespread use of artificial intelligence, in particular with regard to the ethical and legal aspects associated with it.

First of all, the students are able to differentiate and classify the different types and functions of Artificial Intelligence. They also know the sectors and industries in which artificial intelligence is already being used and in which far-reaching developments are emerging.

In addition, the students know about the various possibilities of conscious misuse of artificial intelligence, especially when it comes to using artificial intelligence to

achieve illegal goals - and the students also know about collateral risks that the use of artificial intelligence can bring, and which are not based on conscious intent.

The resulting legal and ethical problems of the use of artificial intelligence can be classified and differentiated by the students. This applies to both the underlying ethical issues and the resulting approaches to legal regulation.

2 Module Content and Course Schedule

Module Content

With regard to the types and functions of artificial intelligence, the following approaches in computer science are discussed: knowledge systems, expert systems, decision trees, machine learning, neural networks (including how human neural networks work) and deep learning. Here, sub-categories and special manifestations of the individual approaches are also presented. In this context, individual industries and sectors are presented in which artificial intelligence is already being used, as well as emerging developments and possible uses in the future. This also includes the simultaneous and combined use of different applications of artificial intelligence.

The possibilities of abuse of Artificial Intelligence will be presented on a sector-specific basis. The relevant sectors are: information technology, economics, politics, social affairs and warfare. This is complemented by the collateral risks of using artificial intelligence that is not based on conscious intent. For this purpose, three risk areas are formulated that are already recognizable: autonomy risks, distortion risks and networking risks.

The legal-ethical aspects resulting from the contents presented above are presented from two perspectives: First, the ethical problems and challenges are formulated, then the resulting regulatory options are discussed. In this context, it is also explained that legislation is always an overall product of ethical and regulatory considerations.

Course Schedule

1. Types and functions of artificial intelligence
    a. Knowledge systems
    b. Expert systems
    c. Decision trees
    d. Machine learning
    e. Neural networks (including how human neural networks work)
    f. Deep learning

2. Use of artificial intelligence in individual sectors and industries

3. Abuse of artificial intelligence
    a. Information technology
    b. Economics
    c. Politics
    d. Social affairs
    e. Warfare

4. Collateral risks of using artificial intelligence
    a. Autonomy risks

b. Distortion risks

c. Networking risks

5. Legal-ethical aspects concerning artificial intelligence

a. Ethical considerations

b. Resulting regulatory approaches

3 Didactic Concept

- Lecture and interactive workshop elements
- Integration of web media
- Independent case studies and presentations

4 Bibliography

Turner, Jacob / Rules, Robot (2018): Palgrave Macmillan.

Lin, Patrick / Jenkins, Ryan / Abney, Keith (Editors) (2017): Robot Ethics 2.0, Oxford University Press.

Russell, Stuart / Norvig, Peter (2020): Artificial Intelligence, 4th Ed., Prentice Hall.

Financial Management		
Duration	1 semester	
Study Semester	6th semester	
Frequency	Summer semester	
Recommended Prerequisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar, Project Workshop	
Responsible for Module	Prof. Dr. Christian Kammlott	
Teaching Personnel	Prof. Dr. Christian Kammlott	
Requirement for Awarding of ECTS Points	Passed module examination	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☒ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

Students will develop an in-depth understanding for the (financial) situation of companies, especially based on financial analytics and key performance indicators. After completing the module, they will be able to identify strengths, weaknesses and potentials of companies, identify adequate financing instruments, work out restructuring and optimization measures and map their financial consequences. Furthermore, the students will be enabled to apply the learned connections to new and practical cases. In addition, students train their social skills by assuming responsibility and willingness to learn through the self-responsible pre- and post-processing of content, recognizing and solving problems themselves, and taking on teamwork (learning) responsibility for other students as well. During presentations, students learn to professionally present their learning outcomes and to be responsible for them.

2 Module Content and Course Schedule

Financial management executives are at the interface between accounting and finance and corporate strategy. In principle, every business decision affects the financial situation of a company and is therefore directly or indirectly connected with the function of financial management. This applies to start-ups, small and medium-sized companies as well as large corporations. In terms of value-oriented corporate management, the focus of the course is therefore the topic of financial analysis as an instrument for assessing and reconciling corporate success, asset and capital structure on the basis of annual financial statements and forecasts.

Course Schedule

1. Understanding and restructuring financial statements

2. Case Studies in financial analysis and management

3. Final workshop and presentation

3 Didactic Concept

Nearly all knowledge is taught through case studies. At the beginning, concrete tasks are asked which have to be solved. In the subsequent consolidation phase, the students are confronted with real practical problems and thus open situations for which the problems have to be identified by the students first and then solutions have to be worked out. A special focus of the lecture is on the learning of transfer know-how, because the mentioned problems cannot be considered in isolation, but consist of complex questions which have to be combined.

The conclusion of the event is usually a case study with a practice partner during which the students demonstrate the acquired competencies.

The lecture requires a permanent pre- and post-processing of content and it is carried out in the form of workshops that require teamwork. In this respect, a permanent participation is a mandatory requirement for the successful completion of this module.

If group size permits, grade and credits are awarded on the basis of a learning portfolio and an oral assignment. A written examination may be offered alternatively. Detailed information and details will be announced by the lecturer at the beginning of the semester.

4 Bibliography

There are no required textbooks for this course due to its broad nature and scope. However, general books on financial analysis might be helpful. Cases will be provided in advance.

Geoengineering		
Duration	1 semester	
Study Semester	6th semester	
Frequency	Summer semester	
Recommended Prere-quisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	Same as credit points	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar	
Responsible for Module	Prof. Dr. Peter Fischer-Stabel	
Teaching Personnel	Prof. Dr. Peter Fischer-Stabel	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☒ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

In this course, the students will learn the fundamentals of meteorology and climate sciences as well as the basic principles of climate modelling to be able to explain the climate system. Based on this knowledge, the participants will do research work to get an overview regarding the different concepts and technologies, but also the potential and risks of Geo-Engineering. As a general learning goal, after the class, the students will be able to follow the ongoing discussion regarding climate engineering and its effects on an objective science-based level. In addition, they will be able to estimate the effort needed for an implementation and the potential effects by the application of this technologies.

2 Module Content and Course Schedule

The course is structured as follows:

1. Introduction and course overview

Outline of course topics, didactic approach and individual introduction

2. Fundamentals of Meteorology

Brief overview in the meteorology and climate science, definition of terms, fundamentals of meteorological measurement networks

3. The Climate System

Climate zones, factors affecting climate, climate variation, historical aspects, causes of changes, projections

4. Natural Events altering the Climate

Effects of natural events such as Milanokovitch cycles, major volcanic eruptions, solar flares, forest fires etc. to the climate are discussed

5.-9. Concepts of Geo-Engineering I - V

Introduction to different technologies such as carbon capture and storage (CCS), solar radiation management, ocean fertilization, forestry and others

10. Geo-Engineering and Environmental Ethics

Ethical aspects of such technologies are discussed as well as the legal and political framework

11. Final individual Presentation

Presentation of a special topic in the thematic frame of the module

12. Wrap-up and Course summary

3 Didactic Concept

- Seminar format: alternating lecture, seminaristic- and cooperative project phases
- Media-supported presentations
- Course media and handouts available online
- Flexible course concept and adjustment of topics depending on individual student background and input
- Intensive media use and up-to-date example
- Excursions

4 Bibliography

Keith, David, 2001: Geoengineering - *Nature*, **409**, 420.

Further information on recently published online and offline sources is supplied during the course.

Programming in Java		
Duration	1 semester	
Study Semester	6th semester	
Frequency	Summer semester	
Recommended Prerequisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	Same as credit points	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture, Integrated exercises	
Responsible for Module	Prof. Dr. Stephan Didas	
Teaching Personnel	Prof. Dr. Stephan Didas	
Requirement for Awarding of ECTS Points	Passed module examination	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☒ Project presentation	☐ Portfolio ☐ Term paper or essay ☒ Practical exam ☐ Colloquium

1 Learning Goals
This course enables the students to master the basics of the Java programming language and to use them in practical projects.

2 Module Content and Course Schedule

The lecture covers the basics of programming in Java. A modern general purpose programming language with application possibilities in almost all modern areas of computer systems is taught. The contents include:

- Basics of Java
- Control structures

- Data types
- Classes and Objects
- Exceptions, Threads, and Streams
- The basics of User Interface Programming

3 Didactic Concept

Lecture with integrated exercises, practicing by given example problems and a programming project.

4 Bibliography

- J. T. Streib, T. Soma: Guide to Java – A concise introduction to programming, 2nd edition, Springer, 2023.
- J. Barker: Beginning Java Objects – From Concepts to Code, 3rd edition, Apress, 2023.
- C. Ullenboom: Java ist auch eine Insel, Rheinwerk Computing, 17. Auflage, 2023.
  (In German, earlier editions are available as OpenBook.)

Solar Energy		
Duration	1 semester	
Study Semester	6th semester	
Frequency	Summer semester	
Recommended Prerequisites	Knowledge of electrical engineering and physics	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 45 h	
Self-Study	105 h	
Total Workload	150 h	
Course Language	English	
Type	Lecture	
Responsible for Module	Prof. Dr. Henrik te Heesen	
Teaching Personnel	Prof. Dr. Henrik te Heesen	
Requirement for Awarding of ECTS Points	Passed module examination Grade and credit points are awarded based on portfolio examination. The portfolio examination consists of exercises that accompany the course and a written exam at the end of the course. Both exams must be passed to complete the course successfully. The overall grade is calculated as the average of both partial tasks.	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☒ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

The learning objectives of the Solar Energy module focus on providing an understanding of photovoltaic systems. Students will learn the principles of converting solar en-

ergy into electricity, the structure of solar cells and modules, and a photovoltaic system's components and life cycle. In addition, they will become familiar with technical terms and scientific concepts and develop analytical skills to address technical issues in the renewable energy field. The goal is to equip students with the knowledge and skills needed to contribute effectively to the growth and development of renewable energy technologies. Achieving these learning objectives will provide students with a solid foundation in photovoltaics.

2 Module Content and Course Schedule

Fundamentals of Solar Energy: This section covers the basic principles of solar energy and its conversion into usable electricity through photovoltaic systems. The underlying physical and engineering concepts are discussed in detail.

Design of solar cells and modules: This section covers the design and operation of solar cells and modules, including the impact of design on overall system efficiency. Emphasis is placed on technical considerations such as material selection, cell geometry, and operating conditions.

Components of a Photovoltaic System: The various components of a photovoltaic system, including inverters, grid integration, and monitoring systems, are described and analyzed in this section. Students will learn to understand these components' role in ensuring the system's overall functionality and their impact on system performance.

Photovoltaic System Life Cycle: This section covers the life cycle of a photovoltaic system, including key phases such as design, construction, and operation. Students will become familiar with the technical and operational considerations that play a role in each phase and the importance of each phase to the successful implementation and sustainability of the system.

Technical Knowledge and Analytical Skills: This section allows students to apply their knowledge to real-world situations and critically analyze and address technical issues in the renewable energy field. Emphasis is placed on developing technical knowledge and analytical skills that will be useful in future careers in the renewable energy field.

3 Didactic Concept

Seminar with exercises

The concept of the teaching form is "Flipped Classroom": The students acquire the content basics through guided self-study, the attendance time is used for the joint processing of assignments.

4 Bibliography

Quaschning, Volker. Renewable Energy and Climate Change. Wiley. 2010

DGS. Planning and Installing Photovoltaic Systems. Routledge. 2013

Educational videos on solar energy engineering

Further literature will be announced during the course

Strategic Marketing		
Duration	1 semester	
Study Semester	6th semester	
Frequency	Summer semester	
Recommended Prere-quisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar	
Responsible for Module	Prof. Dr. Thorsten Schaper	
Teaching Personnel	Prof. Dr. Thorsten Schaper, Dr. Silvia De Magalhaes Car-valho	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

On completing this course students will be able to:

- apply various methods to analyze different aspects of the marketing environment and the company itself,
- define measurable marketing targets,
- develop effective marketing strategies,
- integrate the sustainable marketing approach within the strategy profile of a company,
- display an informed, holistic understanding of the decision-making and
- implementation processes that lead to the internationalization of firms,

- define and select appropriate management ratios.

As a general learning goal, students will be enabled in teambuilding and collaboration to achieve group objectives. During the case studies, students learn to work professionally in multi-cultural teams and develop solutions for oral presentations.

2 Module Content and Course Schedule

Module Content

Companies want to ensure their survival and growth, medium- and long-term by using the approach of strategic marketing management. To fulfill these targets, companies have to make decisions about effective marketing strategies. This module illustrates step-by-step the development of strategic marketing decisions. Firstly, an analysis and outlook of the marketing environment and the company itself is conducted. Based on this, the different marketing strategies like product/market strategies, competitive strategies and regional market strategies are discussed.

Key aspects of regional marketing strategies are specific decisions in the area of international marketing. Accordingly, and keeping in mind the competitive pressures of today's business environment, this module focuses also on strategic international marketing and discusses, firstly, the important decision of whether to internationalize or not. Subsequently, different aspects of the process of internationalization are considered, such as the selection of international markets, a variety of different market entry strategies and the details of creating and implementing a global marketing plan.

Course Schedule

The course is structured as follows:

Chapter A: Basics of Strategic Marketing Management

1 Marketing Decision-making Process

2 Sustainable Marketing Management Marketing Strategy

3 Marketing Strategy

Chapter: B Analysis and Outlook of the Marketing Environment and the Company Itself

1 Analysis of Markets and Customers

2 Analysis of Branch Attractiveness

3 Analysis of Competitors

4 Analysis of the Company

5 Summary: Analysis of the Marketing Environment and the Company Itself

Chapter C: Marketing Concept

Chapter D: Marketing Targets

Chapter E: Marketing Strategy

1 Product/Market Strategies

2 Competitive Strategy/Positioning

3 Strategies of Market Management

4 Regional Marketing Strategies

4.1 National Strategies

4.2 International Strategies

4.2.1 The Decision whether to Internationalize

4.2.2 International Market Selection (IMS)

4.2.3 Market Entry Strategies

4.2.4 The International Marketing Plan

4.2.5 Implementing the Global Marketing Plan

5 Combination of Marketing Strategies

Chapter F: Marketing Controlling

3 Didactic Concept

The format of the course is mixed. Each session comprises an initial introduction into the respective topic followed by and interlaced with informal discussions. The students shall be encouraged to share their knowledge by contributing actively to class discussions.

This course has a main focus on group work and case studies. Each group consists of 3 to 4 participants and has to elaborate solutions with regard to the various questions and presents its results in front of the audience.

4 Bibliography

A set of Microsoft PowerPoint slides will be distributed to the students before the class starts. For further reading the following textbooks are recommended:

Hollensen, S. / Opresnik, M. O. (2021): International Marketing: Principles and Practice. A Management-Oriented Approach, Opresnik Marketing Consulting.

Hollensen, S. (2020): Global Marketing. 8th ed., Pearson Education Limited.

Homburg, C. / Kuester, S. / Krohmer, H. (2009): Marketing Management: A Contemporary Perspective, McGraw-Hill Education.

Kotler, P. / Keller, K. L. / Mairead, B. / Goodmann, M. / Hansen, T. (2009), Marketing Management, Pearson Education Limited

Kotler, P. / Wong, V. / Saunders, J. / Armstrong, G. (2005): Principles of Marketing, Pearson Education Limited.

Usunier, J-C. / Lee, J.A. (2009): Marketing Across Cultures, 5th ed., Pearson Education Limited.

Sustainability and Law		
Duration	1 semester	
Study Semester	6th semester	
Frequency	Summer semester	
Recommended Prerequisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78%	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar, Project Workshop	
Responsible for Module	Prof. Dr. Kathrin Nitschmann	
Teaching Personnel	Prof. Dr. Kathrin Nitschmann	
Requirement for Awarding of ECTS Points	Passed module examinations	
Methods of Evaluation	☒ Written exam ☐ Oral exam ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals

The students will gain knowledge about the relationship of sustainability strategies and law and about the analysis of legal textual genres and legal thinking. They will recognize the difficulties of implementing sustainability in positive law and understand legal systems as part of the necessary framework for the implementation of sustainable strategies.

The students understand and contextualize relevant legal norms in order to apply them to selected case studies and law projects and to discuss them critically. The acquired knowledge will enable the participants to assess and evaluate sustainable development from a legal point of view.

2 Module Content and Course Schedule

The seminar presents and discusses reference points of legal regulations in the fields of ecology, economics and social issues against the background of international and national development of sustainability strategies. The difficulty of implementing sustainability as an indefinite legal term into positive law is examined. Knowledge about relevant European and German legal norms and legal principles is transmitted and serves to enhance students' understanding of decision taking in different social fields. In case studies students apply their knowledge in a practice-orientated way and present the results.

Course Schedule

1. Global developments and consensus of sustainable development strategies
2. Reference points of legal regulations in the fields of ecology, economy and social issues
3. Sustainability as an indefinite legal concept
4. Sustainability in law
   4.1. European Perspective (European norms and principals), Charter of Fundamental Rights, Treaty on the Functioning of the European Union)
   4.2. National perspective (Constitutional Law, Public Law)
5. Law Projects in the field of sustainability
6. Case studies

3 Didactic Concept

- Lecture and interactive workshop elements
- Integration of web media
- Guest lectures and expert talks
- Independent case studies and presentations

4 Bibliography

Dernbach, J./Mintz, J.A., Environmental Laws and Sustainability: An Introduction, Sustainability 2011, 3, 531-540.

Dunlap, T./Stolleis, M., Public Law in Germany. A Historical Introduction from the 16th to the 21st Century, Oxford University Press 2014.

Graham, N., This is Not a Thing: Land, Sustainability and Legal Education.

Journal of Environmental Law, Volume 26, Issue 3, November 2014, Pages 395–422.

Sustainable Development Goals		
Duration	1 semester	
Study Semester	6th semester	
Frequency	Summer semester	
Recommended Prere-quisites	None	
Classification	☐ Required Course ☒ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	Same as credit points	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	English	
Type	Seminar	
Responsible for Module	Prof. Dr. Milena Valeva	
Teaching Personnel	Prof. Dr. Milena Valeva	
Requirement for Award-ing of ECTS Points	Passed module examination	
Methods of Evaluation	☐ Written exam ☐ Oral exam ☐ Laboratory performance ☒ Project presentation (30%)	☐ Portfolio ☒ Term paper or essay (70%) ☐ Practical exam ☐ Colloquium

1 Learning Goals

This course offers an overview & engagement of the global agenda of United Nations (UN) in regard to sustainability - Sustainable Development Goals (SDGs). Within this module students will understand and reflect on the historicity and systematics as well as on the local application of the SDGs. The main focus lies on an international project work with external local partner (National Park Hunsrück-Hochwald), students will elaborate – together with students from Israel – in mixed project groups – concepts for improved SDG-orientation of the external partner and the region of Birkenfeld. The project work will take place as virtual exchange & e-workshops.

2 Module Content and Course Schedule

In order to expand the professional, methodical and personal competences in the area of UN SDGs, students will develop strategic concepts as local interpretation and implementation guidelines of chosen SDGs within the context of the National Park Hunsrück-Hochwald. Design-thinking, Sprint-Design and social business canvas and therefore leading teaching methods.

Course Schedule

The content of the course is structured as follows:

Session 1: introduction & course overview
Session 2. VUCA world & megatrends – definition & effects
Session 3: think global – act local: Glocalism
Session 4: UNO: history, structure & functions & UN Global Compact
Session 5: UN Millennium Development Goals (MDGs)
Session 6: UN Sustainable Development Goals (SDGs): basic ideas and concepts
Session 7: Case Studies
Session 8-11: SDGs & Social Innovation
Session 12: SDGs & Human Rights
Session 13: SDGs & Civil Society
Session 14: course summary

3 Didactic Concept

- course sessions at 180 minutes each
- seminar format: lecture, discussion, coaching
- media-supported presentation
- virtual exchange
- collaboration with students from abroad
- project work
- moderated discussions
- work in class
- work in groups
- student presentations

4 Bibliography

Filho, W. (2018). Handbook of Sustainability Science and Research, Springer Cham, https://doi.org/10.1007/978-3-319-63007-6

Kaltenborn, M., Krajewski, M., Kuhn, H. (2020). Sustainable Development Goals and Human Rights. Springer Cham, https://doi.org/10.1007/978-3-030-30469-0

Portales, L. (2019). Social Innovation and Social Entrepreneurship. Palgrave Macmillan Cham. https://doi.org/10.1007/978-3-030-13456-3

https://glocalismjournal.org

Additional literature as online and offline sources is supplied during the course.

Foreign Language: French III		
Duration	1 semester	
Study Semester	According to the individual language study plan.	
Frequency	Winter semester and if required	
Recommended Prereq-uisites	French I – II	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78 %	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	French *German students will have to take at least 2 modules in foreign language for at least 2 semesters each. An individual language study plan will be discussed prior the start of lectures.* *Module contents are aligned according to the respective qualification of students.*	
Type	Seminar	
Responsible for Module	Prof. Dr. Stefan Diemer	
Teaching Personnel	Christina Juen, Aloisia Sens and further lecturers	
Requirement for Awarding of ECTS Points	Passed module examinations	
Methods of Evaluation	☒ Written exam (50%) ☒ Oral exam (50%) ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium
1 Learning Goals French *Communicative competence*		

Reading: Can understand short, simple texts containing the highest frequency vocabulary, including a proportion of shared international vocabulary items, work, family, shopping and immediate surroundings.

Speaking: Can give a simple description or presentation of people, living or working conditions, daily routines, likes/dislikes, etc. as a short series of simple phrases and sentences linked into a list. Can exchange personal ideas about specific topics. Can describe his/her background and education, immediate surroundings and other things associated with immediate needs in a simple way.

Writing: Can write a series of simple phrases and sentences linked with simple connectors like 'and', 'but' and 'because'.

Listening: Can understand phrases and expressions related to areas of most immediate priority (e. g. very basic personal and family information, shopping, local geography, employment) provided speech is clearly and slowly articulated.

(based on Common European Framework of Reference for Languages: Learning, Teaching, Assessment, Level A2)

Focus on business French

Intercultural competence (traditions, jobs, holidays, daily routines, values of a society, etc.)

Can draw intercultural comparisons on a basis level and knows about French values of society.

Methodical competence (strategies for listening and reading, speaking and writing; how to deal with different text types and media)

Can order short texts in paragraphs according to content. Can find simple headlines for paragraphs.

Language correctness (grammar, pronunciation and intonation, lexis, orthographic correctness)

Can e. g. describe events in the past (passé compose and imparfait), prepositions of time and space, verbs with à / de, relative pronouns, future tenses, adjectives and its degrees, difference between adjectives and adverbs

2 Module Content and Course Schedule French

Online Activities

You revise and deepen grammar and vocabulary of everyday situations with the help of the online activities and in class time you transfer your knowledge to business situations

World of work, applying for a job, telephoning, expressing conditions, giving advice, understanding notifications at the workplace, describe the workplace, make/ accept/ confirm / cancel appointments, writing a mail

Planify a business trip as you participate at a trade fair: talking about a town, asking for information …

Giving basic information about your society

Grammar: Prepositions of time and space / the tenses (past/ present/ future), conjunctions, adjectives and its degrees

Course Schedule

Focus on business French

1. On the phone at work: make/ accept/ confirm/ cancel appointments
2. Confirm an appointment in a mail
3. Reading and studying job advertisements and applying for a job
4. Describe your working place and talk about your tasks at work
5. Planify a business trip
6. Talk about your society

3 Didactic Concept French

- Primarily communicative teaching method
- Intensive media use (DVD: video sequences to start each unit, free app for smartphone supports self-study), newspapers, Internet research etc.)
- French Rallye A2 on OpenOlat
- Course media and handouts available online
- communicative training (reading, listening, speaking and writing; intercultural communication)

4 Bibliography French

M.P. Rosillo et al. (2013): Quartier d'Affaires 1, A2. CLE international.

B. Tauzin et al. Objectif Express 1, Hachette.

Additional material provided by lecturer (cultural knowledge, etc.).

Foreign Language: French IV		
Duration	1 semester	
Study Semester	According to the individual language study plan.	
Frequency	Summer semester and if required	
Recommended Prereq-uisites	French III	
Classification	☒ Required Course ☐ Compulsory Optional Subject	
Credit Points	5	
Weight of Grade	2.78 %	
Contact Hours	4 SWS / 60 h	
Self-Study	90 h	
Total Workload	150 h	
Course Language	French *German students will have to take at least 2 modules in foreign language for at least 2 semesters each. An individual language study plan will be discussed prior the start of lectures.* *Module contents are aligned according to the respective qualification of students.*	
Type	Seminar	
Responsible for Module	Prof. Dr. Stefan Diemer	
Teaching Personnel	Christina Juen, Aloisia Sens and further lecturers	
Requirement for Award-ing of ECTS Points	Passed module examinations	
Methods of Evaluation	☒ Written exam (50%) ☒ Oral exam (50%) ☐ Laboratory performance ☐ Project presentation	☐ Portfolio ☐ Term paper or essay ☐ Practical exam ☐ Colloquium

1 Learning Goals French

Communicative competence

Reading: Can understand the main points of clear standard input on familiar matters regularly encountered in work, school, leisure, etc.

Listening: can deal with most situations likely to arise while travelling in an area where the language is spoken.

Writing: can produce simple connected text on topics that are familiar or of personal interest.

Speaking: can describe experiences and events, dreams, hopes and ambitions and briefly give reasons and explanations for opinions and plans.

(based on Common European Framework of Reference for Languages: Learning, Teaching, Assessment, Level B1)

Focus on business French

Intercultural competence (traditions, jobs, holidays, daily routines, values of a society, etc.)

Can draw intercultural comparisons on a basis level and knows about French values of society and in business.

Language correctness (grammar, pronunciation and intonation, lexis, orthographic correctness)

Can e. g. describe events in the past, know the different kinds of phrases and can use them, can use pronouns (double pronouns) and the sequence of tenses, can differentiate between the "indicatif / subjonctif".

2 Module Content and Course Schedule French

You discover the world of work as an employer and an employee.

You can present your firm, talk about figures, develop and describe a product, start a marketing campaign, think of publicity slogans and a way to commercialize your product.

You discover the different services of a firm, you treat clients orders and complaints.

You think of alternative methods of work.

Course Schedule

Focus on business French

1. Oral presentations: different kinds and how to speak in the public
2. How to present a firm and how to talk about figures?
3. Invent your product and commercialize it.
4. Start a marketing campaign and think about a publicity
5. How to react to complaints?
6. How can an employer motivate his employees?

3 Didactic Concept French

- Primarily communicative teaching method
- Intensive media use (DVD: video sequences to start each unit, free app for smartphone supports self-study), newspapers, Internet research etc.)
- Project based working.
- Course media and handouts available online
- Communicative training (reading, listening, speaking and writing; intercultural communication)

4 Bibliography French

M.P. Rosillo et al. (2013): Quartier d'Affaires 2, B1. CLE international.

B. Tauzin et al. Objectif Express 2, Hachette.

Additional material provided by lecturer (cultural knowledge, etc.).