



Umwelt-Campus  
Birkenfeld

H O C H  
S C H U L E  
T R I E R

# Module Descriptions

**Bachelor Program**  
**Sustainable Business and Technology**  
**(B. Eng.)**

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# Curriculum

Sustainable Business and Technology		SWS	ECTS
1st Semester	Mathematics I	4	5
	Physics	4	5
	Fundamentals of Sustainable Business	8	10
	Intercultural Communication	4	5
	German / Foreign Language I	4	5
	<b>Total</b>	<b>24</b>	<b>30</b>
2nd Semester	Mathematics II	4	5
	Chemistry and Ecology	4	5
	Thermodynamics	4	5
	Principles of Engineering I	4	5
	Accounting and Finance I	4	5
	German / Foreign Language II	4	5
<b>Total</b>	<b>24</b>	<b>30</b>	
3rd Semester	Principles of Engineering II	4	5
	Information Technology	4	5
	International Law and International Economic Policy	4	5
	Scientific Methods and Concepts	4	5
	Accounting and Finance II	4	5
	German / Foreign Language III	4	5
<b>Total</b>	<b>24</b>	<b>30</b>	
4th Semester	Sustainable Waste and Waste Water Treatment Technologies	4	5
	Sustainable Energy Systems	4	5
	Lab Work	4	5
	Manufacturing Technology	4	5
	Cleaner Production and Operations Management	4	5
	German / Foreign Language IV	4	5
<b>Total</b>	<b>24</b>	<b>30</b>	
5th Semester	Ethics and Society	4	5
	Elective	4	5
	Elective	4	5
	Interdisciplinary Project	8	10
	German / Foreign Language V	4	5
<b>Total</b>	<b>24</b>	<b>30</b>	
6th Semester	Elective	4	5
	Elective	4	5
	Career Planning and Employability	4	5
	Bachelor Thesis (12 ECTS) and Colloquium (3 ECTS)	12	15
<b>Total</b>	<b>24</b>	<b>30</b>	
<b>Total</b>		<b>144</b>	<b>180</b>

<b>Module 1: Mathematics I</b>	
Duration	1 semester
Study Semester	1st semester
Frequency	Winter semester
Recommended Prere- quisites	None
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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. Rita Spatz
Teaching Personnel	Prof. Dr. Rita Spatz, Dr. Stephan Didas, Natalie Didas
Requirement for Award- ing of ECTS Points	Passed module examination(s) Passing an intermediate test is required for registering for the final exam.
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b>	
The students know the basics of the analysis of real functions in one and several variables and can apply them on typical problems. They can identify problem types, find the relevant mathematical tools and apply them appropriately to the given task.	
<b>2 Module Content and Course Schedule</b>	
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. 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.

<b>Module 2: Physics</b>		
Duration	1 semester	
Study Semester	1st semester	
Frequency	Winter semester	
Recommended Prere- quisites	None	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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. Michael Bottlinger	
Teaching Personnel	Prof. Dr. Michael Bottlinger	
Requirement for Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> Students can describe, understand, and perform physical experiments of the listed contents. Based on the acquired physical skills typical problems can be solved by the students in the field of engineering.		
<b>2 Module Content and Course Schedule</b> The lecture deals with the basics of physics and introduces mechanics and optics. It includes the following topics: <ul style="list-style-type: none"> <li>▪ Scientific methods, hypotheses and verification</li> <li>▪ Physical quantities and physical constants</li> </ul>		

- Volume measurement, weight measurement, temperature measurement (specific procedures, calibration, monitoring)

### Mechanics

- Accelerated motion
- Forces, momentum, energy, power
- Rotational movements, focus
- Vibrations, resonance
- Waves, polarization, Doppler effect

### Optics

- Introduction to electromagnetic waves
- Huygens Principle
- Reflection, diffraction, refraction
- Speed of Light
- Simple optical instruments

### Course Schedule

1. An introduction to the basic principles in physics is given. Physical quantities and units are explained and derived
2. The basic principles in mechanics like accelerated motion, Newton's Laws, and energy are presented.

The concept of the distribution of light is explained, simple optical instruments are introduced.

### **3 Didactic Concept**

- Lectures
- Exercises

### **4 Bibliography**

Matthew Sands, Richard Feynman, Robert B. Leighton. The Feynman Lectures on Physics.

Paul A. Tipler, Gene Mosca. Physics for Scientists and Engineers. W. H. Freeman. 2007



<b>Module 3: Fundamentals of Sustainable Business</b>		
Duration	1 semester	
Study Semester	1st semester	
Frequency	Winter semester	
Recommended Prere- quisites	None	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> Compulsory Optional Subject	
Credit Points	10	
Weight of Grade	5.56%	
Contact Hours	8 SWS / 120 h	
Self-Study	180 h	
Total Workload	300 h	
Course Language	English	
Type	Lecture	
Responsible for Module	Prof. Dr. Christian Kammlott	
Teaching Personnel	Prof. Dr. Christian Kammlott, Prof. Dr. Klaus Helling, Kai Schlachter and further lecturers with specific talks	
Requirement for Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>Students will identify organizational goals using the core principles and tools of business and management. They will understand the entire process of identifying, creating and capturing values to be realized by enterprises. Also students will gain a basic understanding of the cross-functional relationships between the different functions of a business organization. Also, they will be able to demonstrate the influence of external environmental conditions on the entrepreneurial process as well as identify potential ethical conflicts and social responsibility issues involving different stakeholders of the firm. The core objective is to understand that the integration of sustainability in the</p>		

business model of companies is necessary. Furthermore, students will gain a reasonable level of competency in technical accounting knowledge and will be able to apply accounting transactions.

## **2 Module Content and Course Schedule**

The course serves as a natural starting point by identifying and analyzing the structure of modern enterprises. Therefore, transmission of basic knowledge and methods for analytic decision making are the course's main objectives. Students are provided with an overview of essential economic questions and methods and introduced with the diverse functional units a firm is composed of.

This module further enables students to develop the knowledge and skills to understand, articulate, create and critique the theory behind sustainable development, and many companies' attempts to integrate sustainable approaches into their everyday business practices.

In addition students are introduced to the basic concepts, methods and practices of accounting, and therefore students do not need any prior knowledge of the subject.

However, as accounting involves the manipulation of data 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:

- The fundamental concepts of accounting, and the various accounting conventions that apply these concepts
- The uses to which accounting information may be put
- Different types of accounting entity
- The generation of the data recorded in accounting systems
- The recording of basic transactions within the double-entry system
- The periodic measurement of profit by businesses
- The preparation of annual financial statements (statement of financial position, income statement, statement of cash flows) for simple businesses
- The various elements of financial statements: assets, liabilities and capital

### Course Schedule

#### 1. Understanding the Basics of Business

From Need to Demand

The activity of the enterprise: Creating and Capturing Values

#### 2. Introduction to Sustainable Business

Meaning of sustainability for companies

Strategies to implement Sustainability in business models

Case studies on Sustainable Business

#### 3. Introduction to Technical Accounting

### Basic Accounting Concepts

The course will begin with an introduction of accounting and a consideration of accounting as an information system. Basic concepts of accounting will be introduced, and the alternative systems as well as conventions of accounting that have been developed to apply these concepts will be introduced and discussed.

### Processing Accounting Data I

This session will examine the generation of the data recorded in accounts. The structure of the double-entry bookkeeping will be explained, and its application in different contexts illustrated.

#### Processing Accounting Data II

In part II, we will address the recording of transactions and the preparation of the trial balance.

#### Preparing Financial Statements

This session will deal with the preparation of the statement of financial position and income statement from the accounting records. By the end of this session, students should be able to prepare simple financial statements from basic accounting records, from details of transactions and apply the knowledge in case studies.

#### 4. Functions of Sustainable Business

Production, Logistics, Economics, Human Resources, Marketing, Controlling, Industrial Ecology, Circular Economies, Ecological Economics, Corporate Finance

#### Wrap up and Summary

### **3 Didactic Concept**

- The course consists of lectures and exercises
- Media-supported presentation
- Intensive media use and up-to-date examples
- Interactive Bookkeeping Tutorial

### **4 Bibliography**

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

Atrill P. & McLaney E., Financial Accounting for Decision Makers, (8th ed.), Pearson, [2016]

Further literature to be announced.

<b>Module 4: Intercultural Communication</b>		
Duration	1 semester	
Study Semester	1st semester	
Frequency	Winter semester	
Recommended Prere- quisites	None	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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, Marie-Louise Brunner M.A.	
Requirement for Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input checked="" type="checkbox"/> Project presentation	<input checked="" type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>Students will gain key knowledge about cultural identities in order to be able to contextualize 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 for intercultural communicative events.</p> <p>The exemplary discussion of barriers in intercultural communication will improve students' ability to recognize and understand potential obstacles and to develop and apply strategies to enhance communication across cultures (intra- and intercultural), particularly in a professional setting.</p> <p>On the basis of the acquired knowledge, students will be able to recognize structural specifics of other cultures on an individual, regional or global level. The application of</p>		

the skills presented and practiced in the will enable students to successfully work together with people from other cultural contexts. They can preempt or solve 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, stereotype, external perception, transnationality, politeness and hybridity. Up-to-date research findings from applied and job-related fields (business and economy, policy, international relations) serve to reflect and enhance 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 experience of difference in order to recognize and understand interactions in a context of different identities and cultures. Practical exercises such as simulations, role play and critical incidents illustrate multiple instances of intercultural communication and serve as the basis for the creation of individual communication portfolios.

### Course Schedule

#### 1. Foundations 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.

#### 2. Verbal/nonverbal communication and culture

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

#### 3. Language, identity and intercultural communication

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

#### 4. Understanding intercultural transitions: from adjustment to acculturation

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

#### 5. Intercultural communicative competence

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

#### 6. Intercultural competence in a global context

World Englishes and their role in a global environment, professional and workplace settings, legal contexts.

#### 7. Aspects of intercultural management

Focus on working, interacting and managing in different cultures

#### 8. 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 talks
- Project workshops with international partners
- Cooperative sessions with blended learning elements
- Independent project work and portfolio design

### **4 Bibliography**

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

Hofstede, Geert, Gert Jan Hofstede, and 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, and Charles Hampden-Turner. 2012. Riding the waves of culture – Understanding diversity on global business. 3rd ed. Boston: Nicholas Brealey International.

<b>Module 5: German / Foreign Language I</b>	
Duration	1 semester
Study Semester	1st semester
Frequency	Winter semester
Recommended Prerequisites	German: None / Foreign Language: See module description in the appendix.
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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. <i>Students with German as their first language (C2 CEFR equivalent) can choose a free combination of other language courses with equal credit load offered in the UCB'S Language and Communication program in the GFL/Foreign Language modules. Individual language study plans can be compiled with the assistance of the Language and Communication team.</i> <i>A selection of possible language modules is attached in the appendix.</i>
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	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals German</b>	
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, the participants have language skills according to level A1 CEFR.

## **2 Module Content and Course Schedule German**

The course trains speaking, listening, writing and reading skills with the goal of 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/campus/organisation/fachbereichuwur/sprache-kommunikation/student-info/>.



**Module 6: Mathematics II**

Duration	1 semester	
Study Semester	2nd semester	
Frequency	Summer semester	
Recommended Prere- quisites	Mathematics I	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 Award- ing of ECTS Points	Passed module examination(s) Passing an intermediate test is required for registering for the final exam.	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> 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 can be required for registration for the final exam.

## **4 Bibliography**

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

<b>Module 7: Chemistry and Ecology</b>		
Duration	1 semester	
Study Semester	2nd semester	
Frequency	Winter semester	
Recommended Prere- quisites	None	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 and Laboratory Exercise	
Responsible for Module	Prof. Dr. Stefan Stoll	
Teaching Personnel	Prof. Dr. Stefan Stoll	
Requirement for Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input checked="" type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>The students learn about the functioning of important ecosystems. They understand the essential matter cycles, the role of biodiversity and know important environmental pollutants as well as their effect on organisms. The students can apply basic monitoring methods to assess the status of ecosystems.</p>		
<b>2 Module Content and Course Schedule</b> <p>This module covers basics in environmental sciences. The following topics will be covered:</p> <ul style="list-style-type: none"> <li>▪ Important terrestrial, freshwater and marine ecosystems</li> <li>▪ Carbon, nitrogen, phosphorus and water cycle</li> <li>▪ Basic chemical building blocks of life</li> </ul>		

- Important metabolic processes and pathways
- The origin and role of biodiversity in ecosystems
- Environmental pollution of the atmosphere, water and soils: compounds, effects, and management strategies

Important local ecosystems will be visited and basic environmental monitoring methods will be applied to assess their condition.

### **3 Didactic Concept**

- Lecture
- Field trip
- Laboratory

### **4 Bibliography**

McMurry, Fay. Chemistry. Prentice Hall.

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

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

Wetzel. Limnology - Lake and River Ecosystems. Academic Press.

<b>Module 8: Thermodynamics</b>		
Duration	1 semester	
Study Semester	2nd semester	
Frequency	Summer semester	
Recommended Prere- quisites	Analysis, Physics	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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. Henrik te Heesen	
Teaching Personnel	Prof. Dr. Henrik te Heesen	
Requirement for Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>Based on the basic knowledge of mathematics and physics, students have gained knowledge in (technical) thermodynamics. The fundamental laws can be applied to technical and physical effects in everyday life. Moreover the students have acquired the ability to see the theoretical core in a complex practical context.</p>		
<b>2 Module Content and Course Schedule</b> <ul style="list-style-type: none"> <li>▪ Fundamentals of thermodynamics (thermal state variables, work, heat, internal energy and enthalpy, first law of thermodynamics)</li> <li>▪ Gas mixtures (Ideal gas mixtures, equation of state, standard state)</li> <li>▪ Irreversible processes and state variables for their evaluation (second law of thermodynamics, entropy, cyclic processes, state changes in the T-S diagram)</li> </ul>		

- State equations for ideal gases: Thermal and caloric state variables, entropy
- Changes of state of an ideal gas (state laws, state changes in closed and open systems, cycles, thermal efficiency, heat pump and chiller)
- Thermodynamic cycles (Carnot, Diesel, Otto, Rankine)
- Fundamentals of heat transfer

#### Course Schedule

1. An introduction to the basic principles of thermodynamics are given
2. The thermodynamic processes and laws are derived.

Thermodynamic circles are derived; examples of the application of these circles are explained.

#### **3 Didactic Concept**

- Lecture
- Exercises

#### **4 Bibliography**

Matthew Sands, Richard Feynman, Robert B. Leighton. The Feynman Lectures on Physics.

Paul A. Tipler, Gene Mosca. Physics for Scientists and Engineers. W. H. Freeman. 2007

<b>Module 9: Principles of Engineering I</b>		
Duration	1 semester	
Study Semester	2nd semester	
Frequency	Summer semester	
Recommended Prere- quisites	Mathematics I, Physics	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>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.</p>		
<b>2 Module Content and Course Schedule</b> <p>The lecture deals with the principles of engineering. It includes the following topics:</p> <ul style="list-style-type: none"> <li>▪ Technical drawings by means of computer aides methods</li> </ul>		

- 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



<b>Module 10: Accounting and Finance I</b>		
Duration	1 semester	
Study Semester	2nd semester	
Frequency	Summer semester	
Recommended Prere- quisites	None	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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, Kai Schlachter	
Requirement for Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>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.</p>		

## 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. Financial statements and financial analysis of financial statements

Introduction to financial statement analysis, which is a powerful tool and important groundwork for different addressees of financial statements, each having different objectives in learning about the financial circumstances of the company.

#### 5. 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.

#### 6. 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.

#### 7. 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)

Jerry J. Weygandt, Paul D. Kimmel, Donald E. Kieso, Accounting Principles, 11th Edition International Student Version

<b>Module 11: German / Foreign Language II</b>	
Duration	1 semester
Study Semester	2nd semester
Frequency	Summer semester
Recommended Prerequisites	German Language I / Foreign Language: See module description in the appendix.
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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. <i>Students with German as their first language (C2 CEFR equivalent) can choose a free combination of other language courses with equal credit load offered in the UCB'S Language and Communication program in the GFL/Foreign Language modules. Individual language study plans can be compiled with the assistance of the Language and Communication team.</i> <i>A selection of possible language modules is attached in the appendix.</i>
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	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals German</b>	
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, the participants have language skills according to level A2 CEFR.

## **2 Module Content and Course Schedule German**

The course trains speaking, listening, writing and reading skills with the goal of 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/campus/organisation/fachbereichuwur/sprache-kommunikation/student-info/>.

<b>Module 12: Principles of Engineering II</b>		
Duration	1 semester	
Study Semester	3rd semester	
Frequency	Winter semester	
Recommended Prere- quisites	Mathematics I, Physics, Principles of Engineering I	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>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.</p>		
<b>2 Module Content and Course Schedule</b> <p>The lecture deals with the principles of Engineering. It includes the following topics:</p>		

- 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

<b>Module 13: Information Technology</b>		
Duration	1 semester	
Study Semester	3rd semester	
Frequency	Winter semester	
Recommended Prere- quisites	None	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input checked="" type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>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.</p>		
<b>2 Module Content and Course Schedule</b> <p>Based on the fundamentals of computer science, a structured way of thinking and program development will be conveyed.</p> <ul style="list-style-type: none"> <li>▪ Computer architecture and system software</li> <li>▪ Algorithms (pseudo code, flow diagrams)</li> <li>▪ Programming tools and languages</li> <li>▪ Data types and expressions (program languages, especially Matlab)</li> </ul>		



- Modularization (procedures, functions, local variables, recursion)
- Computer Networks & 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

<b>Module 14: International Law and International Economic Policy</b>		
Duration	1 semester	
Study Semester	3rd semester	
Frequency	Winter semester	
Recommended Prere- quisites	None	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input checked="" type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input checked="" type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>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.</p>		

In the end of the course the students shall 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 shall enable 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 shall be enabled to analyze and evaluate the relevant legal risks before or when entering into a contract for a company.

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

By the end of this course students should also be 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 should also be 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 shall be 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 Liability 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

<b>Module 15: Scientific Methods and Concepts</b>		
Duration	1 semester	
Study Semester	3rd semester	
Frequency	Winter semester	
Recommended Prere- quisites	None	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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	Prof. Dr. Oliver Braun	
Teaching Personnel	Prof. Dr. Oliver Braun, Dr. Stefan Bagusche and further lecturers with specific topics	
Requirement for Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input checked="" type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> Students will gain profound insights into the field of scientific work. They will be able to structure a thesis as well as present their main ideas to an audience. They will gain experience in literature research and in reading and understanding scientific papers published in top-tier journals. Their ability in analytical thinking and working will be increased.		
<b>2 Module Content and Course Schedule</b> This course gives an introduction to the basic principles of scientific work. Topics include the structure of a thesis, the structure of a presentation, sourcing and utilizing research literature, writing a thesis, presenting and discussing ideas.		

### Course Schedule

1. Structure of a thesis
2. Structure of a presentation
3. Literature research
4. Scientific papers
5. Practical realization

### **3 Didactic Concept**

- Lectures
- Homework assignments
- Presentations

### **4 Bibliography**

Anglia Ruskin University Library. Guide to Harvard style of referencing. Available at: [http://libweb.anglia.ac.uk/referencing/files/Harvard\\_referencing\\_2016.pdf](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

<b>Module 16: Accounting and Finance II</b>		
Duration	1 semester	
Study Semester	3rd semester	
Frequency	Winter semester	
Recommended Prere- quisites	None	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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, Kai Schlachter	
Requirement for Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>This course aims students to provide an introduction to national and international financial reporting standards, and to develop a broad understanding of accounting proceedings, techniques, concepts and conventions as well as the links between the three financial statements. Furthermore, students will learn some of the alternative technical methods and practices of accounting. At the end of the course, students are also able to understand and prepare group accounts and get a brief introduction about Management Accounting.</p>		
<b>2 Module Content and Course Schedule</b> <p>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</p>		



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

Jerry J. Weygandt, Paul D. Kimmel, Donald E. Kieso, Accounting Principles, 11th Edition International Student Version

<b>Module 17: German / Foreign Language III</b>	
Duration	1 semester
Study Semester	3rd semester
Frequency	Winter semester
Recommended Prerequisites	German I – II / Foreign Language: See module description in the appendix.
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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	<p>German, French, Spanish, Italian etc.</p> <p><i>Students with German as their first language (C2 CEFR equivalent) can choose a free combination of other language courses with equal credit load offered in the UCB'S Language and Communication program in the GFL/Foreign Language modules. Individual language study plans can be compiled with the assistance of the Language and Communication team.</i></p> <p><i>A selection of possible language modules is attached in the appendix.</i></p>
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	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals German</b>	
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, the participants have language skills according to level B1 CEFR.

## **2 Module Content and Course Schedule German**

The course trains speaking, listening, writing and reading skills with the goal of 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/campus/organisation/fachbereichuwur/sprache-kommunikation/student-info/>.

<b>Module 18: Sustainable Waste and Waste Water Treatment Technologies</b>		
Duration	1 semester	
Study Semester	4th semester	
Frequency	Summer semester	
Recommended Prere- quisites	Chemistry and Ecology	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input checked="" type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>Students have acquired basic knowledge of Circular Economy technical and management approaches and the classification of waste. They are able to assess sustainable systems (recycling rate, energy intensity, output values, costs, technical alternatives, low-tech solutions).</p> <p>The students know the innovative technical paths of Circular Water Systems and Eco Sanitation. Beside the basic understanding of standard steps of waste water treatment they will have the knowledge on sustainable systems by an analysis of pilot plants for nutrients recovery (N,P), energy saving (energy autarkic plants), future plastic filter options and low tech solutions for developing countries.</p>		
<b>2 Module Content and Course Schedule</b>		

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.

<b>Module 19: Sustainable Energy Systems</b>	
Duration	1 semester
Study Semester	4th semester
Frequency	Summer semester
Recommended Prere- quisites	Physics and Thermodynamics
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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	Prof. Dr. Henrik te Heesen
Requirement for Award- ing of ECTS Points	Passed module examination(s)
Methods of Evaluation	<input type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input checked="" type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> 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.	
<b>2 Module Content and Course Schedule</b> 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: <ul style="list-style-type: none"> <li>▪ Energy demand, generation, and transportation</li> </ul>	

- 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 Quaschnig. Understanding renewable energy systems. Earthscan/ Routledge London. 2016.

Additional references will be given during the course



**Module 20: Lab Work**

Duration	1 semester	
Study Semester	4th semester	
Frequency	Summer semester	
Recommended Prerequisites	Physics, Chemistry and Ecology, Principles of Engineering 1, Thermodynamics	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 exercise	
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 examination(s)	
Methods of Evaluation	<input type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input checked="" type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input checked="" type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> Students have gained knowledge in experimental design, test execution and evaluation of test series. Moreover, they have acquired the ability to reproduce and to plan an experimental setup as well as converting the results. Furthermore, they have the capacity to present and discuss scientifically researched results. They have acquired the fundamentals of a good laboratory practice.		
<b>2 Module Content and Course Schedule</b> On completion of this module students will have: Undertaken advanced experimental work, with due attention to safety in the chemical laboratory and other laboratories;		

Manipulated an advanced apparatus and record data for subsequent analysis;  
Undertaken advanced independent experimental work, with due attention to safety, and demonstrated the ability to write clear, scientific reports  
Solved problems using modern experimental techniques;  
Developed an awareness of the nature of investigative chemistry, and the ability to  
Interpreted and presented experimental evidence;  
Developed their practical and problem solving skills.  
Students will choose four experiments of interest from a semester catalogue of experiments.

### **3 Didactic Concept**

- Lecture
- Internship

### **4 Bibliography**

Brand, Ian et al., Edexcel GCSE [9-1] Combined Science Core Practical Lab: Book 1, Pearson Education Limited, 2016

Brand, Ian et al., Edexcel GCSE [9-1] Combined Science Core Practical Lab: Book 2, Pearson Education Limited, 2017

LaPlace, Stuart: Biology Practicals: Field & Lab Experiments, CreateSpace Independent Publishing Platform, 2014

<b>Module 21: Manufacturing Technology</b>		
Duration	1 semester	
Study Semester	4th semester	
Frequency	Summer semester	
Recommended Prerequisites	Principles of Engineering I	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>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.</p>		
<b>2 Module Content and Course Schedule</b>		

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  
[www.cleaner-production.de](http://www.cleaner-production.de)

<b>Module 22: Cleaner Production and Operations Management</b>		
Duration	1 semester	
Study Semester	4th semester	
Frequency	Summer semester	
Recommended Prere- quisites	None	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>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.</p> <p>They understand the meaning of energy consumption and material use in industrial processes and are able to think about solutions for sustainable processes.</p> <p>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.</p>		
<b>2 Module Content and Course Schedule</b>		

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](http://www.cleaner-production.de)

<b>Module 23: German / Foreign Language IV</b>	
Duration	1 semester
Study Semester	4th semester
Frequency	Summer semester
Recommended Prere- quisites	German I – III / Foreign Language: See module description in the appendix.
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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	<p>German, French, Spanish, Italian etc.</p> <p><i>Students with German as their first language (C2 CEFR equivalent) can choose a free combination of other language courses with equal credit load offered in the UCB'S Language and Communication program in the GFL/Foreign Language modules. Individual language study plans can be compiled with the assistance of the Language and Communication team.</i></p> <p><i>A selection of possible language modules is attached in the appendix.</i></p>
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 examination(s)
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium

### **1 Learning Goals German**

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, the participants have language skills according to level B2 CEFR.

### **2 Module Content and Course Schedule German**

The course trains speaking, listening, writing and reading skills with the goal of 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/campus/organisation/fachbereichuwur/sprache-kommunikation/student-info/>.



<b>Module 24: Ethics and Society</b>		
Duration	1 semester	
Study Semester	5th semester	
Frequency	Winter semester	
Recommended Prere- quisites	None	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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. Klaus Rick, Prof. Dr. Stefan Diemer	
Teaching Personnel	Prof. Dr. Klaus Rick, Prof. Dr. Stefan Diemer	
Requirement for Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input checked="" type="checkbox"/> Project presentation	<input checked="" type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>Students will identify and comprehend the importance of sustainable corporate governance and responsible management of persisting and often conflicting goals in modern enterprises.</p> <p>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.</p>		

Students will internalize essentials and instruments of modern sustainability management 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.

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 today's 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". 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, contemporary examples and implementations, successes and failures, financial disasters through ignorance of business ethics resp. sust. aspects, Sustainability Balanced Scorecard (SBSC), cooperation with non-governmental organizations, effectively conducted ISO EU DIN management standards, advanced payment models
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

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

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

K. Gibson: Ethics and Business: An Introduction, Cambridge 2007

R.R. Sims: Why Giants Fall – Ethics and Corporate Social Responsibility, 2003  
Harvard Business Review on Corporate Ethics, 2003 (introductory literature)  
K. Meyer, M.W. Peng: International business, 2016  
D. Mendez: The culture solution, 2017  
C. Storti: The art of doing business across cultures, 2017  
L. Ciochetto: Globalisation and advertising in emerging economies, 2014  
S. Liu, Z. Volcic, C. Gallois: Introducing intercultural communication, 2014  
D.L. Rogers: The digital transformation playbook, 2016.

German

Hentze J. Thies B.: Unternehmensethik und Nachhaltigkeitsmanagement, Bern 2012

<b>Module 25/26/29/30: Elective</b>	
Duration	1 semester
Study Semester	5th semester / 6th semester
Frequency	Winter semester / summer semester
Recommended Prere- quisites	None
Classification	<input type="checkbox"/> Required Course <input checked="" type="checkbox"/> 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(s)
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input checked="" type="checkbox"/> Laboratory performance <input checked="" type="checkbox"/> Project presentation <input checked="" type="checkbox"/> Portfolio <input checked="" type="checkbox"/> Term paper or essay <input checked="" type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<p><b>Important Information</b></p> <p>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.</p> <p>Please note that the following modules <u>cannot</u> be considered as an "Elective":</p> <ul style="list-style-type: none"> <li>▪ Hauptseminar in englischer Sprache (e.g. all "Study Semester" modules)</li> <li>▪ Zweite Fremdsprache</li> <li>▪ Fachsprache Englisch</li> <li>▪ Business Englisch</li> <li>▪ Sprachen I</li> <li>▪ Sprachen II</li> <li>▪ Sprachen III</li> </ul>	

- 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.

<b>Module 27: Interdisciplinary Project</b>		
Duration	1 semester	
Study Semester	5th semester	
Frequency	Winter semester	
Recommended Prerequisites	Scientific Methods and Concepts	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 Awarding of ECTS Points	Passed module examination(s)	
Methods of Evaluation (depends on course structure to be defined by lecturer)	<input type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input checked="" type="checkbox"/> Laboratory performance <input checked="" type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input checked="" type="checkbox"/> Term paper or essay <input checked="" type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>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.</p>		
<b>2 Module Content and Course Schedule</b> <p>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</p>		

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.



<b>Module 28: German / Foreign Language V</b>	
Duration	1 semester
Study Semester	5th semester
Frequency	Winter semester
Recommended Prerequisites	German Language I – IV / Foreign Language: See module description in the appendix.
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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. <i>Students with German as their first language (C2 CEFR equivalent) can choose a free combination of other language courses with equal credit load offered in the UCB'S Language and Communication program in the GFL/Foreign Language modules. Individual language study plans can be compiled with the assistance of the Language and Communication team.</i> <i>A selection of possible language modules is attached in the appendix.</i>
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	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b>	
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, the participants 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 of 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/>.

<b>Module 31: Career Planning and Employability</b>		
Duration	1 semester	
Study Semester	6th semester	
Frequency	Summer semester	
Recommended Prere- quisites	None	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 Award- ing of ECTS Points	Passed module examination(s)	
Methods of Evaluation	<input type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input checked="" type="checkbox"/> Career Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> A student passing this module should be able to: <ol style="list-style-type: none"> <li>1. Critically reflect on experiences in the workplace drawing upon appropriate material for the analysis of these experiences</li> <li>2. Compare, contrast and evaluate different placement/work experiences in national and international settings</li> <li>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</li> <li>4. Evaluate their own knowledge, skills (including soft skills) and attributes and use these to develop an action plan to meet career aspirations</li> </ol>		

## 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

Students will use up-to-date online career planning and development resources; a source materials and reading list will be made available via the respective learning platforms.

<b>Module 32: Bachelor Thesis (12 ECTS) and Colloquium (3 ECTS)</b>		
Duration	1 semester	
Study Semester	6th semester	
Frequency	Winter and summer semester	
Prerequisites	See § 20 of the Examination Regulations: Prerequisites for admission to the Bachelor Thesis  Successful participation in the Flying Days Event for students starting from the winter semester 2019/2020	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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	<input checked="" type="checkbox"/> Bachelor Thesis <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input checked="" type="checkbox"/> Colloquium
<b>1 Learning Goals</b>		
Students shall provide evidence that they are able to recognize a problem involved in the respective subject and locate a solution thereof in a limited period of time and with defined means of help. They shall prove that they identify the context of the field under examination, is able to place specific problems in context and master common methodology of the subject. The Bachelor Thesis is a part of the examination by way of which the student shall prove that he or she is able to handle a particular task under guidance, working independently and successfully and can provide practical insights into the solution of the thesis' problem.		

In the colloquium, students are able to defend the results of the Bachelor Thesis and present their results in a proper form for the audience. They motivate their approach and make estimations, how assumptions and simplifications may affect the validity of their results. They are able to analyze questions concerning their thesis and results and answer them properly in the context of professional reference.

## **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](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 for this program will be announced at the beginning of each semester and published on the website of the “Sustainable Business and Technology” program. A selection of possible modules is attached below:

<b>Elective 1: Sustainability and Law</b>			
Duration	1 semester		
Study Semester	5th semester		
Frequency	Winter semester		
Recommended Prere- quisites	None		
Classification	<input type="checkbox"/> Required Course <input checked="" type="checkbox"/> 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 Award- ing of ECTS Points	Passed module examination(s)		
Methods of Evaluation	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Written exam  <input checked="" type="checkbox"/> Oral exam  <input type="checkbox"/> Laboratory performance  <input type="checkbox"/> Project presentation                 </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Portfolio  <input checked="" type="checkbox"/> Term paper or essay  <input type="checkbox"/> Practical exam  <input type="checkbox"/> Colloquium                 </td> </tr> </table>	<input type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input checked="" type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<input type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input checked="" type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium		
<b>1 Learning Goals</b>			
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.



<b>Elective 2: Remote Sensing</b>		
Duration	1 semester	
Study Semester	5th semester	
Frequency	Winter semester	
Recommended Prere- quisites	None	
Classification	<input type="checkbox"/> Required Course <input checked="" type="checkbox"/> 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(s)	
Methods of Evaluation	<input type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input checked="" type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input checked="" type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>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.</p> <p>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.</p>		

## **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
- Practical 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.

<b>Elective 3: Environmental Monitoring</b>	
Duration	1 semester
Study Semester	5th semester
Frequency	Winter semester
Recommended Prere- quisites	None
Classification	<input type="checkbox"/> Required Course <input checked="" type="checkbox"/> 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(s)
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> Students learn about the objectives and selected methods of environmental monitoring. 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.	
<b>2 Module Content and Course Schedule</b> This course teaches the planning and implementation of environmental monitoring measures. The data collected will be documented and subjected to statistical analyses. <i>Course Schedule</i> 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.

<b>Elective 4: Energy Informatics</b>	
Duration	1 semester
Study Semester	5th semester
Frequency	Winter semester
Recommended Prere- quisites	None
Classification	<input type="checkbox"/> Required Course <input checked="" type="checkbox"/> 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. Henrik te Heesen
Teaching Personnel	Prof. Dr. Henrik te Heesen
Requirement for Award- ing of ECTS Points	Passed module examination(s)
Methods of Evaluation	<input type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input checked="" type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>The students have acquired further knowledge of the structure of modern energy systems and basic knowledge in the transfer of tasks from the energy industry in digital form. They will be able to work out and further develop problem solutions for energy systems and present the results from the energy models.</p>	
<b>2 Module Content and Course Schedule</b> <p>In order to model, simulate and optimize energy systems under consideration of volatile, regenerative energy sources, the generation and consumption systems in a region must be digitally parameterized, so that conclusions can be drawn from this system about potentials for energy saving as well as forecasts for future development. The students will work on the following points:</p>	

1. Selection of a regional energy system (energy holon, energy cluster)
2. Structure of a database
3. Programming of scripts for modelling the energy system
4. Use of algorithms to optimize the energy system
5. Visualization of the energy system and energy flows

The programming language will be Python.

### **3 Didactic Concept**

- Seminar-like lessons with exercises

### **4 Bibliography**

References will be given during the module.

<b>Elective 5: Financial Management</b>	
Duration	1 semester
Study Semester	6th semester
Frequency	Summer semester
Recommended Prere- quisites	None
Classification	<input type="checkbox"/> Required Course <input checked="" type="checkbox"/> 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 Award- ing of ECTS Points	Passed module examination(s)
Methods of Evaluation	<input type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input checked="" type="checkbox"/> Project presentation <input checked="" type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> <p>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.</p>	

## **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.



<b>Elective 6: Environmental Policy</b>	
Duration	1 semester
Study Semester	6th semester
Frequency	Summer semester
Recommended Prere- quisites	None
Classification	<input type="checkbox"/> Required Course <input checked="" type="checkbox"/> 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(s)
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b> 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.	
<b>2 Module Content and Course Schedule</b> The topics are not limited only to the narrow field of environmental policy, but refer also to other fields of sustainability. The course <ul style="list-style-type: none"> <li>▪ Gives and overview about the political system in Germany and the EU;</li> </ul>	

- 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**

Literature in English language will be provided during the course via StudIP.

<b>Elective 7: Sustainable Conflict Resolution (Sustainability and Law)</b>	
Duration	1 semester
Study Semester	6th semester
Frequency	Summer semester
Recommended Prere- quisites	None
Classification	<input type="checkbox"/> Required Course <input checked="" type="checkbox"/> 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 Award- ing of ECTS Points	Passed module examination(s)
Methods of Evaluation	<input type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input checked="" type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<p><b>1 Learning Goals</b></p> <p>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.</p> <p>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-</p>	

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., Environmental Laws and Sustainability: An Introduction, Sustainability 2011, 3, p. 531-540.

<b>Elective 8: Solar Energy</b>	
Duration	1 semester
Study Semester	6th semester
Frequency	Summer semester
Recommended Prere- quisites	Physics
Classification	<input type="checkbox"/> Required Course <input checked="" type="checkbox"/> 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	Prof. Dr. Henrik te Heesen
Requirement for Award- ing of ECTS Points	Passed module examination(s)
Methods of Evaluation	<input type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input checked="" type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals</b>	
The students know the basics of solar energy in particular photovoltaic and solar thermal systems. They recognize technical issues and are able to apply the knowledge to typical questions in solar energy.	
<b>2 Module Content and Course Schedule</b>	
<i>Course Schedule</i>	
<ol style="list-style-type: none"> <li>1. Sun and sun light</li> <li>2. Design and operation of a solar cell and module</li> <li>3. Components of a photovoltaic (PV) system (inverter, grid integration, monitoring)</li> <li>4. Life cycle of a PV system:</li> <li>5. Planning</li> </ol>	

6. Construction
7. Operation
8. Concept of solar thermal systems

### **3 Didactic Concept**

- Lecture and group work

### **4 Bibliography**

DGS. Planning and Installing Photovoltaic Systems. Routledge. 2013

DGS. Planning and Installing Solar Thermal Systems. Routledge. 2010

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

## Appendix

Foreign Language: French I									
Duration	1 semester								
Study Semester	According the individual language study plan.								
Frequency	Winter semester and if required								
Recommended Prere- quisites	None								
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 <i>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.</i> <i>Module contents are aligned according the respective qualification of students.</i>								
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 examination(s)								
Methods of Evaluation	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> Written exam</td> <td style="width: 50%; border: none;"><input type="checkbox"/> Portfolio</td> </tr> <tr> <td style="border: none;"><input checked="" type="checkbox"/> Oral exam</td> <td style="border: none;"><input type="checkbox"/> Term paper or essay</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Laboratory performance</td> <td style="border: none;"><input type="checkbox"/> Practical exam</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Project presentation</td> <td style="border: none;"><input type="checkbox"/> Colloquium</td> </tr> </table>	<input checked="" type="checkbox"/> Written exam	<input type="checkbox"/> Portfolio	<input checked="" type="checkbox"/> Oral exam	<input type="checkbox"/> Term paper or essay	<input type="checkbox"/> Laboratory performance	<input type="checkbox"/> Practical exam	<input type="checkbox"/> Project presentation	<input type="checkbox"/> Colloquium
<input checked="" type="checkbox"/> Written exam	<input type="checkbox"/> Portfolio								
<input checked="" type="checkbox"/> Oral exam	<input type="checkbox"/> Term paper or essay								
<input type="checkbox"/> Laboratory performance	<input type="checkbox"/> Practical exam								
<input type="checkbox"/> Project presentation	<input type="checkbox"/> Colloquium								
<b>1 Learning Goals French</b> <u>Communicative competence</u>									

Reading: can comprehend very short, simple texts a single phrase at a time, picking up familiar names, words and basic phrases and rereading as required.

Speaking: Can produce simple mainly isolated phrases about people and places; can e.g. introduce themselves, ask and answer questions of the type: Where do you live?

Writing: Can write simple isolated phrases and sentences.

Listening: Can follow speech, which is very slow and carefully articulated, with long pauses for him/her to assimilate meaning.

[based on Common European Framework of Reference for Languages: Learning, Teaching, Assessment, Level A 1]

### Intercultural competence

Can identify the basic features of French society, daily routines and traditions.

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

Can listen for key words in a listening comprehension or search for them in a text to help understand what the text/listening is about.

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

Can e.g. can conjugate verbs in the present tense, can differentiate and articulate the intonation of questions and positive sentences

## **2 Module Content and Course Schedule French**

Saying hello and goodbye; questions about name and origin/language/personal data; the alphabet; presenting oneself and introducing other people others; information about family members; numbers 0-1000000

Time, opening hours, week days, daily routines: activities, preferences, appointments

At the bar / at the restaurant: which shops can you find in a city? What to buy there? How to order? How to ask for the way? How to describe it?

food & shopping for groceries: asking and answering questions, indication of quantity, prices (How much is it?); places (Where...?); likes/dislikes; expressing approval; colors; describing flats and houses, objects/rooms in flats/houses; searching for a flat (understanding residential property advertisements)

On the phone: common expressions

Grammar: conjugation of regular verbs and common irregular verbs in the present tense as well as the modal verbs vouloir, pouvoir, savoir, devoir and the imperative

Future tense with "aller + inf."

Aimer, adorer, préférer...

personal pronouns and possessive pronouns, en, y

positive and negative sentences and questions

prepositions to describe the location of things, shops...

### Course Schedule

#### Unit 1-5

1. Hello. My name is...: The first part of this seminar deals with the very general topic of saying hello, telling your name and country of origin, your age, your profession,



your hobbies, your faculty as well as talking about language skills. Other important contents: 1st telephone conversation, addresses, business cards, filling in forms .

2. You ask questions about your partners – changing roles (student / business partner),  
You learn to talk about persons (il / elle)

3. My day: The last part of the seminar is about daily routines, likes and dislikes, times of the day and week days.

*Business focus: tu or vous?*

4. Shopping: Students learn about typical French food items, writing shopping lists and role-play shopping on a farmer's market, using expressions of quantity, talking about prices. They make and confirm appointments in a bar and a restaurant. They read menus and order drinks / meals. Moreover students are supposed to bring a recipe from their home country in order to present it.

5. My flat: In the fourth part of this seminar a closer look is taken at reading and understanding residential property advertisements, describing a flat on campus, comparing living conditions in France to students' country of origin. There will be further practice on telephoning as making appointments ....

*Business focus: rules in an office; look at an office building and the different departments [how to describe the way?]*

### **3 Didactic Concept French**

- Primarily communicative teaching method (role plays for various every-day situations, action-oriented use of verbal patterns (e.g. shopping in the supermarket), interactive exercises)
- Intensive media use (DVD: video sequences to start each unit, free app for smartphone supports self-study),
- Course media and handouts available online
- Business focus right from the start
- Focus on oral production while including Information and Communication Technology Tools such as voicethread, glogster, PowToon ....
- Communicative training (reading, listening, speaking and writing; intercultural communication)
- Social competence (team & group work)

### **4 Bibliography French**

Material provided by lecturer (grammar und lexical exercises, interactive games, informative material/exercises about cultural knowledge, etc.)

Foreign Language: Spanish I		
Duration	1 semester	
Study Semester	According the individual language study plan.	
Frequency	Winter semester and if required	
Recommended Prere- quisites	None	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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	Spanish <i>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.</i> <i>Module contents are aligned according the respective qualification of students.</i>	
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 examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals Spanish</b> <u>Communicative competence</u> Reading: Can comprehend very short, simple texts a single phrase at a time, picking up familiar names, words and basic phrases and rereading as required.		

Speaking: Can produce simple mainly isolated phrases about people and places; can e.g. introduce themselves, ask and answer questions of the type: Where do you live?

Writing: Can write simple isolated phrases and sentences.

Listening: Can follow speech which is very slow and carefully articulated, with long pauses for him/her to assimilate meaning.

(based on Common European Framework of Reference for Languages: Learning, Teaching, Assessment, Level A 1)

Intercultural competence: Can identify daily routines and traditions of the Spanish speaking world.

Methodical competence (strategies for listening and reading, speaking and writing; how to deal with different text types and media): Can listen for key words in a listening comprehension or search for them in a text to help understand what the text/listening is about.

Language correctness: Can e.g. identify the verb position in main clauses, can conjugate verbs in the present tense, can differentiate and articulate the intonation of questions and positive sentences.

## **2 Module Content and Course Schedule Spanish**

Saying hello and goodbye; questions about name and origin/language/personal data; the alphabet; saying sorry, please and thank you; How are you?; introducing others; numbers 0-100, daily routines, time, week days, jobs and work places, formal and informal communicative situations

Grammar: conjugation of regular and irregular verbs in present tense, positive and negative sentences, questions; definite and non-definite article, singular and plural of nouns, reflexive verbs, future form "ir a", adjectives, ser/estar/hay, adjectives

Pronunciation: word stress, general pronunciation rules

### Course Schedule

1. Intro: saying hello, telling your name and country of origin, meeting friends in a bar, ordering food and drinks and paying
2. Jobs and workplaces, formal and informal communicative situations
3. Daily routines and schedules
4. Visiting and describing places, phone calls, writing post cards, giving directions

## **3 Didactic Concept Spanish**

- Primarily communicative teaching method
- Intensive use of audios, course media and handouts available online, business focus
- Communicative training (reading, listening, speaking and writing; intercultural communication, role plays for various every-day situations)
- Social competence (team & group work)

## **4 Bibliography Spanish**

Bürsgens, Claudia et al. 2012: *Perspectivas A1. Al vuelo*. Berlin: Cornelsen & additional material provided by the lecturer

<b>Foreign Language: Italian I</b>	
Duration	1 semester
Study Semester	According the individual language study plan.
Frequency	Winter semester and if required
Recommended Prere- quisites	None
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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	Italian <i>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.</i> <i>Module contents are aligned according the respective qualification of students.</i>
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 examination(s)
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals Italian</b> <u>Communicative competence</u> Reading: can comprehend very short, simple texts a single phrase at a time, picking up familiar names, words and basic phrases and rereading as required.	

Speaking: Can produce simple mainly isolated phrases about people and places; can e.g. introduce themselves, ask and answer questions of the type: Where do you live?

Writing: Can write simple isolated phrases and sentences.

Listening: Can follow speech, which is very slow and carefully articulated, with long pauses for him/her to assimilate meaning.

(based on Common European Framework of Reference for Languages: Learning, Teaching, Assessment, Level A 1)

### Intercultural competence

Can identify the basic features of Italian society, daily routines and traditions.

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

Can listen for key words in a listening comprehension or search for them in a text to help understand what the text/listening is about.

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

Can e.g. can conjugate verbs in the present tense, can differentiate and articulate the intonation of questions and positive and negative sentences

## **2 Module Content and Course Schedule Italian**

Saying hello and goodbye; questions about name and origin/language/personal data; the alphabet; presenting oneself and introducing other people others; information about family members; numbers 0-1000000

Time, opening hours, week days, daily routines: activities, preferences, appointments

At the bar / at the restaurant: which shops can you find in a city? What to buy there? How to order? How to ask for the way? How to describe it?

Food & shopping for groceries: asking and answering questions, indication of quantity, prices (How much is it?); places (Where...?); likes/dislikes; expressing approval; colors; describing flats and houses, objects/rooms in flats/houses; searching for a flat (understanding residential property advertisements)

Grammar: conjugation of regular verbs and common irregular verbs in the present tense as well as the modal verbs, piacere, personal pronouns and possessive pronouns, positive and negative sentences and questions, prepositions to describe the location of things, shops...

### Course Schedule

1. Hello. My name is...: The first part of this seminar deals with the very general topic of saying hello, telling your name and country of origin, your age, your profession, your hobbies, your faculty as well as talking about language skills. Other important contents: 1st telephone conversation, addresses, business cards, filling in forms

2. You ask questions about your partners – changing roles (student / business partner), you learn to talk about persons (lui/ lei / Lei)

3. My day: The last part of the seminar is about daily routines, likes and dislikes, times of the day and week days.

4. Shopping: Students learn about typical Italian food items, writing shopping lists and role-play shopping on a farmer's market, using expressions of quantity, talking about prices. They make and confirm appointments in a bar and a restaurant. They read

menus and order drinks / meals. Moreover, students are supposed to bring a recipe from their home country in order to present it.

5. How to describe a city/ how to describe a way?

### **3 Didactic Concept Italian**

- Primarily communicative teaching method (role plays for various every-day situations, action-oriented use of verbal patterns (e.g. shopping in the supermarket), interactive exercises)
- Intensive media use (DVD: video sequences to start each unit, free app for smartphone supports self-study),
- Course media and handouts available online
- Focus on oral production while including Information and Communication Technology Tools such as voicethread, glogster, PowToon ....
- Communicative training (reading, listening, speaking and writing; intercultural communication)
- Social competence (team & group work)

### **4 Bibliography Italian**

D. Piotti. UniversItalia 2.0. A1/2. Hueber Verlag.

Material provided by lecturer (grammar und lexical exercises, interactive games, informative material/exercises about cultural knowledge, etc.)

<b>Foreign Language: French II</b>	
Duration	1 semester
Study Semester	According the individual language study plan.
Frequency	Summer semester and if required
Recommended Prere- quisites	French I
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 <i>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.</i> <i>Module contents are aligned according the respective qualification of students.</i>
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 examination(s)
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals French</b> <u>Communicative competence</u> Reading: can understand very short, simple texts a single phrase at a time, picking up familiar names, words and basic phrases and rereading as required.	

Speaking: Can produce simple mainly isolated phrases about people and places; can e.g. introduce themselves and others, ask and answer questions of the type: Where do you live?

Writing: Can write simple isolated phrases and sentences.

Listening: Can follow speech which is very slow and carefully articulated, with long pauses for him/her to assimilate meaning.

(based on Common European Framework of Reference for Languages: Learning, Teaching, Assessment, Level A 1)

#### Intercultural competence

Can identify the basic features of French society, daily routines in an office, jobs, administrative offices and authorities as well as traditions.

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

Can listen for key words in a listening comprehension or search for them in a text to help understand what the text/listening is about.

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

Can e.g. conjugate verbs in the present, simple future tense and the past tense (avoir /être, can understand the meaning of the modal verbs, can differentiate and articulate the intonation of questions and instructions, prepositions of time and place, adjective endings

## **2 Module Content and Course Schedule French**

The weather, seasons, cardinal points;

Description of regions and hotels and planify a trip/ an excursion: book a hotel, buy tickets, go to a restaurant, describe a city and its monuments,... expressing abilities, possibilities and intentions, make and deny a proposal

Talk about the trip / arrange a trip for a business partner

Jobs and work, exchange private and job-related information, understanding job advertisements, telephoning

Grammar: irregular verbs in the present, prepositions of place & time, past tense with avoir / être; possessive article, demonstrative pronouns, questions with quel..., adjectives

#### Course Schedule

1. Free time: There will be conversation exercises such as talking about hobbies and things people like doing in their free-time or during their work. You learn about jobs and describe what you have to do as f.ex. a teacher.
2. You learn how to express abilities and intentions and how to talk about events in the past.
3. You discover different regions and cities and learn how to present them
4. You learn about different possibilities of travelling (à la gare/ à l'aéroport ..) and how to book tickets
5. You learn how to describe a hotel and book one
6. You planify a trip for a business partner to a city / a region

## **3 Didactic Concept French**



- Primarily communicative teaching method (e.g. role-plays, action-oriented use of verbal patterns, interactive exercises)
- Business focus
- Intensive media use (DVD: video sequences to start each unit, free app for smartphone supports self-study and pronunciation/listening practice and use of Information and communication tools while focusing on oral production)
- Course media and handouts available online
- Communicative training (reading, listening, speaking and writing; intercultural communication)
- Social competence (team & group work)

#### **4 Bibliography French**

Material provided by lecturer (grammar und lexical exercises, interactive games, informative material about cultural knowledge, etc.)

<b>Foreign Language: Spanish II</b>	
Duration	1 semester
Study Semester	According the individual language study plan.
Frequency	Summer semester and if required
Recommended Prere- quisites	Spanish I
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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	Spanish <i>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.</i> <i>Module contents are aligned according the respective qualification of students.</i>
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 examination(s)
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals Spanish</b> <u>Communicative competence</u> 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, 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]

Intercultural competence: Can identify the basic features and values of the Spanish speaking world, daily routines, jobs, as well as traditions and can compare it to own life experience. Can report cultural similarities and differences.

## **2 Module Content and Course Schedule Spanish**

Formal and informal letters, jobs and workplaces, office communication, discussing statistics, numbers 100-1,000,000, making complaints, the weather, families, accepting/refusing proposals, planning activities/events, describing a flat, talking about events in the past

Grammar: pretérito perfecto, pretérito imperfecto, pretérito indefinido, gerund, direct & indirect object, comparative forms, subordinate sentences, imperative

### Course Schedule

1. Making reservations, public transport, express likes/dislikes, food, daily routines
2. Talking about hobbies, planning activities, talking about the past
3. Flats and houses, furniture
4. Discussing statistics, travelling
5. Family, clothes, colors, weather & seasons
6. Jobs and work places, talking about different positions in a company, office communication, formal letters

## **3 Didactic Concept Spanish**

- Primarily communicative teaching method
- Intensive media use (audios & videos, and real computer mediated communication, e.g. chats), course media and handouts available online,
- Business focus, communicative training (reading, listening, speaking and writing; intercultural communication, role plays for various every-day situations),
- Social competence (team & group work)

## **4 Bibliography Spanish**

Alvarez, Vicente et al. 2016. Perspectivas. Curso rápido. A1/A2. Berlin: Cornelsen

Further material provided by the lecturer

<b>Foreign Language: Italian II</b>	
Duration	1 semester
Study Semester	According the individual language study plan.
Frequency	Summer semester and if required
Recommended Prere- quisites	Italian I
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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	Italian <i>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.</i> <i>Module contents are aligned according the respective qualification of students.</i>
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 examination(s)
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals Italian</b>	
<u>Communicative competence</u>	
Reading: can understand very short, simple texts a single phrase at a time, picking up familiar names, words and basic phrases and rereading as required.	

Speaking: Can produce simple mainly isolated phrases about people and places; can e.g. introduce themselves and others, ask and answer questions of the type: Where do you live?

Writing: Can write simple isolated phrases and sentences.

Listening: Can follow speech, which is very slow and carefully articulated, with long pauses for him/her to assimilate meaning.

(based on Common European Framework of Reference for Languages: Learning, Teaching, Assessment, Level A 1)

### Intercultural competence

Can identify the basic features of Italian society, daily routines in an office, jobs, administrative offices and authorities as well as traditions.

### Methodical competence [strategies for listening and reading, speaking and writing; how to deal with different text types and media]

Can listen for key words in a listening comprehension or search for them in a text to help understand what the text/listening is about.

### Language correctness [grammar, pronunciation and intonation, lexis, orthographic correctness]

Can e.g. conjugate verbs in the present and the past tense (avere /essere, can understand the meaning of the modal verbs, can differentiate and articulate the intonation of questions and instructions, prepositions of time and place, adjective endings

## **2 Module Content and Course Schedule Italian**

The weather, seasons, cardinal points;

Description of regions and hotels and planify a trip/ an excursion: book a hotel, buy tickets, go to a restaurant, describe a city and its monuments,... expressing abilities, possibilities and intentions, make and deny a proposal

Talk about the trip

Description of a flat: reading flat advertisements, how to make appointments for viewing a flat? Etc.

Describe a person: its physical appearance + character

Jobs and work, exchange private and job-related information, understanding job advertisements, telephoning

Grammar: irregular verbs in the present, prepositions of place & time, past tense with avere/ essere; possessive article, demonstrative pronouns, questions, adjectives, adverbs and pronouns (direct and indirect)

### Course Schedule

1. Free time: There will be conversation exercises such as talking about hobbies and things people like doing in their free-time or during their work. You learn about jobs and describe what you have to do as f.ex. a teacher.
2. You learn how to express abilities and intentions and how to talk about events in the past.
3. You discover different regions and cities and learn how to present them
4. You learn how to book tickets
5. You learn how to describe a hotel and book one
6. You plan a trip for a business partner to a city / a region
7. You describe persons: physical appearance, character, clothes ...

8. You describe and rent a flat

### **3 Didactic Concept Italian**

- Primarily communicative teaching method (e.g. role-plays, action-oriented use of verbal patterns, interactive exercises)
- Business focus
- Intensive media use (DVD: video sequences to start each unit, free app for smartphone supports self-study and pronunciation/listening practice and use of Information and communication tools while focusing on oral production)
- Course media and handouts available online
- Communicative training (reading, listening, speaking and writing; intercultural communication)
- Social competence (team & group work)

### **4 Bibliography Italian**

D. Piotti, *UniversItalia 2.0*, Hueber, 2016.

Material provided by lecturer (grammar and lexical exercises, interactive games, informative material about cultural knowledge, etc.)

Foreign Language: French III		
Duration	1 semester	
Study Semester	According the individual language study plan.	
Frequency	Winter semester and if required	
Recommended Prere- quisites	French I – II	
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 <i>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.</i> <i>Module contents are aligned according the respective qualification of students.</i>	
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 examination(s)	
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation	<input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals French</b> <u>Communicative competence</u> 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 basic 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 composé 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. Quartier d’Affaires 1, A2. CLE international, 2013.

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

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

<b>Foreign Language: French IV</b>	
Duration	1 semester
Study Semester	According the individual language study plan.
Frequency	Summer semester and if required
Recommended Prere- quisites	French III
Classification	<input checked="" type="checkbox"/> Required Course <input type="checkbox"/> 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 <i>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.</i> <i>Module contents are aligned according the respective qualification of students.</i>
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 examination(s)
Methods of Evaluation	<input checked="" type="checkbox"/> Written exam <input checked="" type="checkbox"/> Oral exam <input type="checkbox"/> Laboratory performance <input type="checkbox"/> Project presentation <input type="checkbox"/> Portfolio <input type="checkbox"/> Term paper or essay <input type="checkbox"/> Practical exam <input type="checkbox"/> Colloquium
<b>1 Learning Goals French</b> <u>Communicative competence</u> 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. Quartier d’Affaires 2, B1. CLE international, 2013.

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

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