International Semester @ Furtwangen Campus

Module Descriptions

On the following pages you will find the module descriptions of lectures taught in English on Furtwangen Campus in the framework of the International Semester.

Not all the modules take place every semester. Please check on our website which modules are offered in which semester (winter or summer semester).

In addition to the listed modules, the following master programmes are taught (partly or completely) in English:

- Smart Systems

- Business Consulting

- Music Design

Exchange students can also choose from the master modules provided they meet the individual requirements.

October 2019
Content

1. Audio Environments
2. Business Continuity Management
3. Cloud Computing Technology
4. Collaborative Systems
5. Cryptography
6. Data and Services
7. Digitalization- Opportunities & Challenges for the Traditional IT
8. Digitalization and New Business Models
9. Electromagnets
10. Energy Business
11. Games Development
12. Global Health
13. Hazardous Work and Fall Protection
14. In-Memory Computing and Big Data with Regard to SAP HANA
15. Innovation Management
16. Innovations that Change the World
17. Interactive Media Installations
18. Intercultural Communication
19. Intercultural Competence in the Media Sector
20. Internet of Things
21. Introduction to Process Mining
22. Knowledge management and Robotics
23. Legal Economic Analysis
24. Logistics and Sales Processes in SAP
25. Media and Society
26. Media Counterculture
27. Methodology in Research and Design
28. Mobile Systems and Applications

October 2019
29. Music for Digital Media
30. Signal Processing for Statistics and Data Science
31. Smart Systems Innovation
32. Sound Culture
33. Technologies in Service
34. This is Germany
35. German as a Foreign Language
  ➢ DaF 1
  ➢ DaF 2
  ➢ DaF 3
  ➢ DaF 4
  ➢ DaF 5
  ➢ DaF 6
Audio Environments

Module code  Workload  Credits  Semester  Repetition  Duration
DM-12-2697    180 h       6        2         SoSe         1 Semester

Course Language  Contact hours  Self-study  Class size
a) Audio Environments, theoretical part  English  SWS / 22,5 h    37,5 h   40
b) Audio Environments, practical part   English  SWS / 22,5 h    97,5 h   20

Learning outcomes

After successfully completing the module, students will be able to ...

Knowledge:

→ define fundamentals of spatial perception and design techniques for virtual and augmented reality applications.
→ name aesthetic aspects of virtual and augmented acoustic reality.

Comprehension:

→ understand the operating principle of different multichannel audio technologies and their properties in the context of different applications.
→ discuss aesthetic aspects of the design of sound environments in the context of different applications.

Application:

→ deal with techniques of acoustic design in different application contexts (hard- and software).
→ deal with aesthetic aspects of the design of virtual and augmented sound environments.

Analysis:

→ analyse complex acoustical scenes in different environments (nature, urban, interieur, etc.).
→ analyse technical and aesthetical aspects of the design of virtual and augmented sound environment critically.

Synthesis:

→ design virtual and augmented sound environments for different applications.

Evaluation:

→ evaluate the technical means in the design of sound environments.
→ evaluate the aesthetical aspects of sound environments.
Individual component content

a) **Audio Environments, theoretical part**
   - Introduction: context and applications
   - Bases of spatial perception
   - Aesthetical bases
   - Analysis of acoustical environment and their perception
   - Multi-channel audio systems and 3D audio techniques
   - Distributed and hybrid systems
   - Acoustic scenography in the performance and exhibition context
   - Acoustic scenography in virtual and augmented surroundings
   - 360° film and interactive audio surroundings
   - Multi channel audio systems and 3D audio technologies in application

b) **Audio Environments, practical part**
   - Practical experimentation with the topics covered by the course a).

Teaching methods

a) **Audio Environments, theoretical part**
   - Lecture

b) **Audio Environments, practical part**
   - Practical work

Prerequisites

a) **Audio Environments, theoretical part**
   - None

b) **Audio Environments, practical part**
   - None
Methods of assessment

**a) Audio Environments, theoretical part**
- Exam (K)  
  Graded assessment (credit points): 3

**b) Audio Environments, practical part**
- Practical work during the semester (SbA)  
  Non-graded assessment (credit points): 3

Applicability of module

Required module in:
- MusicDesign M.A. (SPO-Version: 10)

Required elective module in:
- Medieninformatik M.Sc.
- Design Interaktiver Medien M.A.

Person responsible for module / lecturer

Person responsible for module:
- Prof. Dr. Norbert Schnell

Full-time lecturers:

**a) Audio Environments, theoretical part**
- Prof. Dr. Norbert Schnell  
- Prof. Thorsten Greiner

**b) Audio Environments, practical part**
- Prof. Dr. Norbert Schnell
Reading list (core texts and recommended texts)

a) Audio Environments, theoretical part
   - Weinzierl, Stefan: Handbuch der Audiotechnik, Springer Verlag, 2008
   - Funkhouser, Thomas: Sounds Good to Me, Computational Sound for Graphics, Virtual Reality, and Interactive Systems, SIGGRAPH 2002 Course Notes
   - Fischer-Lichte, Erika: Ästhetik des Performativen, Suhrkamp, 2004

b) Audio Environments, practical part
   - See course a)
Course
Blockchain Technologies and Applications

Description
Blockchain is an emerging foundational technology with many opportunities to create new products, services and business applications. The course covers all aspects of blockchain technology, including smart contracts, consensus mechanisms, blockchain infrastructures and applications. Students will learn about the components of blockchain technology and understand how to design and conceptualize blockchain-based applications. Student teams can develop proof of concept implementations for selected use cases. The course is intended for master students.

Professor
Wolfgang Gräther
http://mitarbeiter.fit.fraunhofer.de/~graether/

Schedule

<table>
<thead>
<tr>
<th>Lecture</th>
<th>List of Topics</th>
<th>Workshop</th>
<th>Groupwork</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Basic Blockchain concepts</td>
<td>Fraunhofer use case analysis framework</td>
<td>Collect use cases, apply Fraunhofer framework</td>
</tr>
<tr>
<td>2</td>
<td>Cryptography and decentralized systems</td>
<td>Process diagrams for use cases</td>
<td>Develop Architecture Ethereum / IOTA</td>
</tr>
<tr>
<td>3</td>
<td>Mechanics of Bitcoin</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>Consensus mechanisms</td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>Smart contracts</td>
<td></td>
<td></td>
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<tr>
<td>6</td>
<td>Smart contract patterns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Blockchain infrastructures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Trends in Blockchain technologies</td>
<td>Proof of concept for use case</td>
<td>Proof of concept for use case</td>
</tr>
<tr>
<td>9</td>
<td>Summary</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Business Continuity Management (SSM)

<table>
<thead>
<tr>
<th>Kennnummer</th>
<th>Workload</th>
<th>Credits</th>
<th>Studien-semester</th>
<th>Häufigkeit des Angebots</th>
<th>Dauer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>90 h</td>
<td>3</td>
<td>2</td>
<td>Jährlich</td>
<td>1 Semester</td>
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</table>

<table>
<thead>
<tr>
<th>Lehrveranstaltungen</th>
<th>Kontaktzeit</th>
<th>Selbststudium</th>
<th>geplante Gruppengröße</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Continuity Management</td>
<td>2 SWS / 22,5 h</td>
<td>67,5 h</td>
<td>15 Students</td>
</tr>
</tbody>
</table>

2 **Lernergebnisse (learning outcomes) / Kompetenzen**

**Knowledge:** The students gain knowledge in

- international standardization on Business Continuity Management and the respective terminology.
- the principles of business continuity and business continuity management.
- how to prepare for and recover from disruptive events (as for example natural disasters, criminal attacks, fires, brake down of energy, loss of supply chain).
- planning and implementation of Business Continuity

**Comprehension:** The students understand the context of risk management and business continuity management based on analysis and impact scenarios and the process of the BC plan development.

**Application:** Application of ISO Standards for Business Continuity as ISO 22301 and ISO 22313 for Business Continuity Management as well as ISO 31000 Risk Management.

**Analysis:** The students have the capacity to evaluate business processes for business continuity needs, executing the business impact analysis for determining BCM strategy and objectives.

**Synthesis:** The students know to collect and prioritize business analysis data to conclude in a specific business continuity strategy. They are able to develop a BC planning for an business organisation.

**Evaluation:** Assessment of existing BCM systems and BCM planning.

3 **Inhalte (Content)**
### Security & Safety Engineering Bachelor

- The introduction of the ISO Standardization and terminology
- The plan-Do-Check-Act model of ISO Management systems as in Business Continuity Management
- The holistic approach of risk and impact analysis, incident response, business continuity and recovery to ensure a minimum business activity
- Application of BCM methodology for an exemplary business environment.
- Objectives, content and development of a business continuity plan.
- Definition of roles and responsibilities for BCM in an enterprise.

#### Lehrformen
Lectures, Working groups, Best praxis examples

#### Teilnahmevoraussetzungen
Competence in English language
Basic knowledge of methods like risk management, process planning, quality management.

#### Prüfungsformen
Written paper in English language on a BCM topic

#### Verwendung des Moduls
Optional module in Safety & Security Engineering Master

#### Modulbeauftragte/r und hauptamtlich Lehrende
Prof. Dipl.-Ing. Ernst-Peter Döbbeling

#### Literatur
1. ISO 22300 Societal Security – Terminology
2. ISO 22301 Societal Security – Business continuity management systems – Requirements
4. ISO PAS 22399 Societal security - Guidelines for incident preparedness and operational continuity management
5. The definite Handbook of Business Continuity Management, Andrew Hiles FBSC, 2011 John Wiley & Sons Ltd, UK
### Module Title: Cloud Computing Technology (Bachelor)

<table>
<thead>
<tr>
<th>Module code</th>
<th>Workload</th>
<th>Credits/CP</th>
<th>Semester</th>
<th>Frequency of module</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>180 h</td>
<td>6</td>
<td></td>
<td>once a year</td>
<td>1 Semester</td>
</tr>
</tbody>
</table>

#### 1 Module
- a) Lecture
- b) Seminar

#### 2 Teaching Language
- English

#### 3 Contact hours
- a) 2 SWS / 22.5 h
- b) 2 SWS / 22.5h

#### 4 Self-study
- a) 68.5 h
- b) 68.5 h

#### 5 Class size
- 30

### Learning outcomes

#### Knowledge (1):
- ... describe Cloud Computing technologies and their terminologies
- ... name the most important properties of Cloud infrastructures and their services
- ... outline Cloud management systems
- ... work with a cloud infrastructure

#### Comprehension (2):
- ... compare different Cloud architectures
- ... evaluate Cloud services
- ... assess the risk of using Cloud services

#### Application (3):
- ... use Cloud services
- ... use Cloud standard APIs
- ... install a Cloud infrastructure

### Individual component content

With Cloud Computing virtualized IT resources (cloud services) are managed and provided to customers depending on demand over the Internet. This is a big step towards the automation of data centers, enabling entirely new business models. Customers can easily book through self-service cloud services and pay only for the duration of use. Important for business customers who have business-critical data are in the cloud, is mainly that they can rely on a secure infrastructure.

a) The aim of this module is to lay the basis for Cloud Computing. Enable the student to investigate topics such as virtualization technologies, load balancing, scaling, Cloud infrastructure management, software APIs, cloud service types, and cloud business models.

b) One of several given topics can be chosen and a research paper has to be written.

### Teaching methods

- Seminar: lecturing and workshop

### Prerequisites

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
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</table>
| 6       | Methods of assessment  
Marked paper |
| 7       | Applicability of module |
| 8       | Person responsible for module/ lecturer  
Prof. Dr. Ch. Reich |
| 9       | Reading list (Core texts and recommended texts) |
|         | - Ch. Baun, M. Kunze; Servervirtualisierung; Informatik Spektrum; Springer-Verlag; 2009  
- Nick Antonopoulos, Lee Gillam; “Cloud Computing - Principles, Systems and Applications”;  
  Computer Communications and Networks; 2010  
- Sushil Jajodia, Krishna Kant, Pierangela Samarati, Anoop Singhal, Vipin Swarup, Cliff Wang;  
  Secure Cloud Computing; Springer; 2014  
- Richard Hill, Laurie Hirsch, Peter Lake, Siavash Moshiri; Guide to Cloud Computing; Springer; 2013 |
## Signals & Systems II

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Workload</th>
<th>Credits</th>
<th>Semester</th>
<th>Frequency of Module</th>
<th>Duration</th>
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<tbody>
<tr>
<td></td>
<td>180 hrs.</td>
<td>6</td>
<td>2</td>
<td>Only summer semester</td>
<td>1 Semester</td>
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### Module Components

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<tbody>
<tr>
<td>1</td>
<td>a) Cryptology</td>
<td>a) English</td>
<td>a) 22,5 hrs.</td>
<td>a) 37,5 hrs.</td>
<td>a) 24</td>
</tr>
<tr>
<td></td>
<td>b) Cryptology Exercise</td>
<td>b) English</td>
<td>b) 11,25 hrs.</td>
<td>b) 48,75 hrs.</td>
<td>b) 24</td>
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<tr>
<td></td>
<td>c) Micro Optics</td>
<td>c) English</td>
<td>c) 22,5 hrs.</td>
<td>c) 37,5 hrs.</td>
<td>c) 24</td>
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### Teaching Language

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<tr>
<td>1</td>
<td>a) English</td>
<td>a) English</td>
<td>a) English</td>
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### Contact Hours

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<tr>
<td>1</td>
<td>a) 22,5 hrs.</td>
<td>a) 11,25 hrs.</td>
<td>a) 22,5 hrs.</td>
<td>a) 37,5 hrs.</td>
<td>a) 37,5 hrs.</td>
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### Self Study

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<tr>
<td>1</td>
<td>a) 37,5 hrs.</td>
<td>a) 48,75 hrs.</td>
<td>a) 37,5 hrs.</td>
<td>a) 37,5 hrs.</td>
<td>a) 37,5 hrs.</td>
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### Class Size

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<tbody>
<tr>
<td>1</td>
<td>a) 24</td>
<td>b) 24</td>
<td>c) 24</td>
<td>a) 24</td>
<td>b) 24</td>
</tr>
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## Learning Outcomes

After successful participation in the module the student

### Knowledge (1)

- understands optical phenomena including Gaussian optics, optical interfaces and materials
- can recollect different elements used for cryptographic or optical subsystems
- knows most widely used standards for cryptographic systems

### Comprehension (2)

- recognises safety or security components in given systems

### Application (3)

- can define the optical components in advanced diagnostic: micromirrors, refractive microlenses or waveguide optics
- can design reflective, geometric, diffractive and integrated optics
- can examine cryptographic protocols and evaluate their security

### Analysis (4)

- can examine the advantages of using active micro optical components
- can analyse systems that contain cryptographic or optical components
- can appraise the best micro-optical fabrication method for the specific application

### Evaluation (6)

- is aware of common threats and attacks on system

## Individual Component Content

a) - design criteria for cryptographically secure systems
   - most common encryption processes
   - message security and message authentication
   - authentication and digital signatures
   - key generation, key negotiation, key transport and key management
   - standards and examples for common protocols, certificates and infrastructure
c) - Introductions to optical materials and optical interfaces  
   - Reflective micro-optics (reflection, planar and nonplanar mirrors, micro-mirrors, adaptive micro-optics)  
   - Refractive micro-optics (lens fundamentals, imaging, primary and chromatic aberrations)  
   - Diffractive micro-optics (diffraction, gratings, diffractive microlenses)  
   - Guided-wave micro-optics (waveguides-ray optics models, waveguide characterization and components, optical fibers)  
   - Active micro-optics (Light emitting diodes, photodetectors, phase and intensity modulator)  
   - Tunable micro-optics (liquid and membrane microlenses)  

4 Teaching Methods  
   a) Lecture  
   b) Practical  
   c) Lecture  

5 Prerequisites  
   Mathematics; Technical Optics  

6 Methods of Assessment  
   b) Non Graded Assessment 1sbH (Written Elaboration) (1 LP)  
   c) Non Graded Assessment 1sbL (Laboratory) (1 LP)  
   Modulprüfung Signals & Systems II 1K (Written Exam) (4 LP)  

7 Applicability of Module  
   Smart Systems M.Sc. (SMA)  

8 Person Responsible for Module  
   Prof. Dr. Paola Belloni (Module Responsible)  
   Prof. Dr. Olaf Neisse (Module Responsible)  

9 Reading List (Core Texts and Recommended Texts)  
   c) Hecht, H.: Optics, Addison-Wesley 2005  
   Herzig, Hans-Peter: Micro-Optics: Element systems and applications, Taylor & Francis Verlag, 1998
### Titel des Moduls

**Data and Services**

<table>
<thead>
<tr>
<th>Kennnummer</th>
<th>Workload</th>
<th>Credits/LP</th>
<th>Studiensemester</th>
<th>Häufigkeit des Angebots</th>
<th>Dauer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>90 h</td>
<td>3</td>
<td>&gt;2</td>
<td></td>
<td>1 Semester</td>
</tr>
</tbody>
</table>

#### Lehrveranstaltungen

- **Sprache**: Englisch
- **Kontaktzeit**: 2 SWS / Y h
- **Selbststudium**: 67.5 h
- **geplante Gruppengröße**: <15

### Lernergebnisse (learning outcomes) / Kompetenzen

After completing this course, a Student should be able:

- To understand and organize data for specific business services.
- To learn how to use software tool for Data Analysis.
- To learn how to use collected data information, create reports, graphs to support service design, or to improve overall service offerings.

### Inhalte

- Data and information
- Introduction to business analytics
- Product service systems
- Data analysis, visualization and reporting
- Engineering Business Intelligence in the design of product services

### Lehrformen

- Lectures and exercises

### Teilnahmeveraussetzungen

### Prüfungsformen

Assessment of the exercises as well as an oral examination

### Verwendung des Moduls

Als Wahlpflichtmodul für die Masterstudiengänge von WING

### Modulbeauftragte/r und hauptamtlich Lehrende

Saed Imran

### Literatur

2. The Kimball Group Reader: Relentlessly Practical Tools for Data Warehousing and Business Intelligence Remastered Collection, ISBN 9781119216315
Digitalization and new Business Models

You want to get deep, hands-on insights about digital transformation presented by two leading managers of the world’s largest independent, end-to-end IT services company? –

Join our course!

What will you learn?

Enabling business opportunities through new IT approaches. Extract of lecture content:

- New Business Models (IT Platforms)
- Internet of things (Industry use cases)
- Open APIs (Real-life implementation)
- User interfaces (Examples)

Methods of learning:

- Work on case studies
- Learn interactively
- Conduct critical appraisals
- Apply your new skills in practice

What does the examination look like?

The assessment of the lecture will be done by a group project. The verbal presentation and documentation of this project can be provided in English or German.

Who will give the lectures?

Ruediger Ernst and Juergen Hecht,

working as leading managers at the largest independent, end-to-end IT services company with many years of experience in the field of digital transformation in various industries and international customer projects.

When will the lectures take place?

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday, 05.04.2019</td>
<td>Friday, 26.04.2019</td>
<td>Friday, 07.06.2019</td>
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<tr>
<td>Saturday, 06.04.2019</td>
<td>Saturday, 27.04.2019</td>
<td></td>
</tr>
<tr>
<td>Each from 9:30 am – 3:30 pm</td>
<td>Each from 9:30 am – 3:30 pm</td>
<td>From 9:00 am – 3:30 pm</td>
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</table>
## Module Title: Electromagnets

<table>
<thead>
<tr>
<th>Module code</th>
<th>Workload</th>
<th>Credits/CP</th>
<th>Semester</th>
<th>Frequency of module</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electromagnetic drives in Mechatronics / Electromagnets</td>
<td>Teaching Language German, if required also in English</td>
<td>Contact hours a) 2 SWS / 22.5 h</td>
<td>Self-study a) 67.5 h</td>
<td>Class size a) 5 - 15</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3 ECTS</td>
<td>4-6 (B.Sc.)</td>
<td>WiSe/SuSe</td>
<td>1 Semester</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1-3 (M.Sc.)</td>
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</tbody>
</table>

### 2 Learning outcomes
After students have completed the module successfully they will be able to ......

- **Knowledge:**
  - know the properties of magnetically hard and soft materials.

- **Comprehension:**
  - understand and explain the structure and functioning of electromagnets as drives.

- **Analysis:**
  - classify motions and construction forms of electromagnets.
  - model and calculate magnetic circles and electromagnets with equivalent circuit models.

- **Evaluation:**
  - discuss the results and the validity of the used models as well as evaluate the design of the drive.

### 3 Individual component content

1. **Introduction and revision**
   - general information, application areas of electromagnetic drives
   - repetition of basic concepts of drive technology
   - parameters and basic laws of electromagetical fields
2. **Operating principle and structure of direct-current magnets**
   - basic elements, classification and structure of electromagnets
3. **Magnetic materials**
   - survey of available magnetic construction material and their relevant magnetical, electrical and mechanical properties (magnetically soft and hard materials)
4. **Analytical consideration**
   a. basic structure (equivalent circuit, simple mathematical description)
   b. steady-state behavior (energy and power consideration, characteristic curves and parameters)
   c. dynamic behavior (differential equations, transient behavior, switching times)
5. **Numeric calculation and simulation**
   - Finite Elemente Analysis for the calculation of magnetic fields (Maxwell as commercial tool; limitations, risks, possible errors)
6. **Influence of electrical excitation and power electronics**
- typical excitation and damping circuits
7. Warming of electrical drives
8. Mechatronic approach for a holistic design
   - consideration of mechanics, magnetic, electronics, thermal, control/control technology ... (internal sensor properties, inverse requirements)
9. Special constructions and their requirements:
   - solenoid valves, polarised magnetic circuits, brakes/clutches, automotive applications

4 Teaching methods
Lecture with exercise examples

5 Prerequisites
Fundamentals of electrical engineering, electromagnetic fields, electronics, kinetics, mechanical design, drive technology.

6 Methods of assessment
Written exam (90 min)

7 Applicability of module
Elective module general, specialised

8 Person responsible for module/ lecturer
Dr.-Ing. Sören Rosenbaum, Kendrion (Villingen) GmbH

9 Reading list (Core texts and recommended texts)

English references:
FACHHOCHSCHULE FURTWANGEN  
UNIVERSITY OF APPLIED SCIENCES  
Wirtschaftsinformatik

**title** | Energy Business
---|---
**lecturer** | Prof. Dr. Eduard Heindl
**classification** | 3 semester 2 SWS 3 credits WPV

**learning** | - Informatics: low  
- Business administration: medium to high  
- Basics: high  
- Key qualifications: medium

**objectives** | - Basic terms in the energy industry  
- production chain  
- Renewable energies and their economic significance

**content** | - Terms: energy, power, electricity, heat  
- Energy and Mobility  
- Energy and Industry 4.0  
- Energy Research Ecosystem  
- energy conversion  
- energy raw materials  
- Thermal power plants  
- Energy Transformation in Germany  
- solar power  
- wind power  
- energy storage  
- transmission grid, Supergrid, smart grid

- The Power Supply Industry: Best Practice Manual for Power Generation..., Margarete Konstantin und Panos Konstantin  
- Balancing Renewable Electricity: Energy Storage, Demand Side Management, and Network Extension from an Interdisciplinary Perspective (Ethics of Science and Technology Assessment), Bert Droste-Franke

**Teaching** | Lecture, joint exercises during attendance times

**Bewertung** | written exam
### Games Development

<table>
<thead>
<tr>
<th>Module code</th>
<th>Workload</th>
<th>Credits/CP</th>
<th>Semester</th>
<th>Frequency of module</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>DM-284-2511-13</td>
<td>180 h</td>
<td>6</td>
<td>Variable</td>
<td>WiSe/SuSe</td>
<td>1 Semester</td>
</tr>
</tbody>
</table>

#### 1 Module

- **a)** Games Development 2D
  - Teaching Language: German/English
  - Contact hours: a) 2 SWS / 22.5 h
  - Self-study: a) 67.5 h
  - Class size: a) 20

- **b)** Games Development 3D
  - Teaching Language: German/English
  - Contact hours: b) 2 SWS / 22.5 h
  - Self-study: b) 67.5 h
  - Class size: b) 20

#### 2 Learning outcomes

After successfully completing the module, students will be able to ....

**Comprehension:**
- explain the basics of games development like animation, transformation, object relationships and event control.

**Application:**
- apply the development environments of Adobe Animate and Unity for the development of interactive applications.

**Analysis:**
- analyse a concept of a complex application or a simple game and plan its realisation.

**Syntheses:**
- independently design and produce complex applications or simple games in 2D or 3D.

#### 3 Individual component content

- **a)** Games Development 2D
  - mode of operation in the Animate-IDE
  - creating and manipulating graphic objects
  - creating and controlling timeline animations
  - hierarchical relations of graphic objects
  - event model of Animate
  - integration of external data into the runtime
  - integration and manipulation of sound
  - working with Animate components

- **b)** Games Development 3D
  - mode of operation in the Unity 3D-IDE
  - creating and manipulating objects
  - creating and controlling timeline animations
  - hierarchical relations of graphic objects
  - message handling in Unity 3D
  - integration of external data into the runtime
4 Teaching methods
   a) Games Development 2D
      - Seminar, workshop, practical work on an example, collective assessment and code reviews.
   b) Games Development 3D
      - cf. seminar a)

5 Prerequisites
   a) Games Development 2D
      - Either the two modules Programming and Basics of Interactive Systems or the two modules Development of Interactive Applications I & II
   b) Games Development 3D
      - cf. seminar a)

6 Methods of assessment
   a) Games Development 2D
      - Composition Graded assessment (CP) 3
   b) Games Development 3D
      - Composition Graded assessment (CP) 3

7 Applicability of module
   Required elective module in:
      - Computer Science in Media – bachelor degree
      - Online Media – bachelor degree
      - Media Design – bachelor degree
      - Music Design – bachelor degree

8 Person responsible for module/ lecturer
   Person responsible for module
   - Prof. Jirka Dell’Oro-Friedl

   Full-time lecturer:
<table>
<thead>
<tr>
<th></th>
<th>Reading list (Core texts and recommended texts)</th>
</tr>
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<tbody>
<tr>
<td>a)</td>
<td>Games Development 2D</td>
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<tr>
<td></td>
<td>- Prof. Jirka Dell'Oro-Friedl</td>
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<tr>
<td>b)</td>
<td>Games Development 3D</td>
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<td>- Prof. Jirka Dell'Oro-Friedl</td>
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<td>9</td>
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<tr>
<td>a)</td>
<td>Games Development 2D</td>
</tr>
<tr>
<td></td>
<td>- Script</td>
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<tr>
<td></td>
<td>- Rosenzweig, Gary: ActionScript 3.0 Game Programming University, 2011</td>
</tr>
<tr>
<td>b)</td>
<td>Games Development 3D</td>
</tr>
<tr>
<td></td>
<td>- see activity a)</td>
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<tr>
<td></td>
<td>- Blackman, Sue: Beginning 3D Game Development with Unity 4, 2013</td>
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</table>
WPV Global Health

Social and Public Health Context

<table>
<thead>
<tr>
<th>Number</th>
<th>Workload</th>
<th>Credits</th>
<th>Study-semester</th>
<th>Frequency</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>WPV</td>
<td>90 h</td>
<td>3</td>
<td>6/7</td>
<td>Every term</td>
<td>1 Semester</td>
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</tbody>
</table>

1 Type of lecture
Seminar in blocks

Time of contact
2 SWS/30 h

Self study
60 h

Size of group
10 – 20 Students

2 Learning outcomes / Competencies
Upon successful completion of the module, students will be able to:

- Understand the global context of Public Health
- Recognize the interdependencies of international policies on global health.
- Access health profile of different countries using the internet; analyse, reflect and discuss findings:
- Apply in-depth knowledge of Public Health Policy

3 Content
- Definition and importance of Global Health
- Global context of Public Health
- International institutions; their policies and programmes (UN, WHO etc.)
- International financial actors (Bretton woods)
- Concepts of Social Determinants of Health
- Health reports and profiles from countries around the world
- Health situation, health care systems and health policies in a selected country (Ghana)
- Health management in low resource settings
- Selected aspects of social life in low resource settings (e.g. Sexual Harassment policies in organisations in Ghana: Analysis of Stakeholder interview)

4 Type of lecture
<table>
<thead>
<tr>
<th>Seminar</th>
</tr>
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<tbody>
<tr>
<td>5</td>
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<tr>
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<tr>
<td>8</td>
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<td></td>
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<td>9</td>
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</table>
Hazardous Work and Fall Protection

Module code | Workload | Credits/CP | Semester | Frequency of module | Duration
FH 26265   | 90 h     | 3          | 6./7. Sem | each summer semester | 1 Semester

1 Module
Hazardous Work and Fall Protection
Teaching Language
English
Contact hours
2 SWS / 22,5 h
Self-study
67,5 h
Class size
max 16

2 Learning outcomes

Hazardous work might occur in construction, mining and many other fields.
Students learn the identification and analysis of hazards in special situation. Furthermore they are able to choose appropriate safety measures.

After successful participations the students have the following capabilities:

Knowledge (1): Students will be able to identify hazardous work and personal protective equipment against falling. Furthermore, they are aware of the special responsibility of supervisors and technical experts.

Comprehension (2): Students will understand the principals of different safety systems and strategies.

Application (3): Students will be able to apply different safety systems and strategies.

Analysis (4): The students will be able to identify hazards at given scenarios. Furthermore, they can check personal protective equipment for safety relevant defects.

Synthesis (5): Based on the hazard identification the students will be able to derive concepts for the prevention at hazardous works. They can justify their decisions an can transfer it to other situations.

3 Individual component content

- Hazardous Work
- Work in confined space
- Fall Prevention
- Physics of falling
- Personal Protective Equipment against falling (PPE aF)
- Check of PPEaF b)
### Teaching methods

Seminar

### Prerequisites

- Safety 1 (recommended)
- Safety 2 (recommended)

### Methods of assessment

- 1 sb K Klausur
- 1 sb A praktische Arbeit

### Applicability of module

Wahlpflichtveranstaltung im Bachelor-Studiengang Security & Safety Engineering, Wahlpflichtmodul in anderen Studiengängen. Die Anrechenbarkeit richtet sich nach den Vorgaben der jeweiligen Prüfungsordnung

### Person responsible for module/lecturer

Prof. Dr. Stephan Lambotte

### Reading list (Core texts and recommended texts)

EN-standard and national safety regulations. Details will be given by the lecturer
**Module Title:** In-memory computing and big data with regard to SAP HANA

<table>
<thead>
<tr>
<th>Module code</th>
<th>Workload</th>
<th>Credits/CP</th>
<th>Semester</th>
<th>Frequency of module</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>180 h</td>
<td>6</td>
<td>3 and higher</td>
<td>Every semester</td>
<td>1 Semester</td>
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</tbody>
</table>

**Learning outcomes**

After passing this module successfully, students are able to ...

**Knowledge (1)**
- Define In-Memory computing and know its evaluation.
- Operation and administration of HANA
- SAP HANA modeling and Data processing

**Comprehension (2)**
- Describe the nature of HANA SPS and Revision strategy
- Describe SAP HANA implementation options
- Describe Sizing and Licencing of SAP HANA

**Application (3)**
- Outline SAP HANA use cases and Applications.
- Design a case study of SAP HANA
- Plan SAP HANA modelling projects

**Individual component content**

- HANA Basics
- HANA Architecture and implementation options
- Hardware and software requirement for SAP HANA
- HANA Setup - (Installation, Post installation and Update)
- HANA Administration & Operation
- High Availability and Disaster Recovery
- Monitoring and Trouble Shooting
- SAP S4HANA
- HANA Use Cases & Data Modelling on HANA
- HANA Case study
### Teaching methods
- Lectures with Demos and Customer stories
- Exercises and practice in the SAP HANA System
- Presentations & discussion on real time customer implementations

### Prerequisites
- Open to learn basic SQL programming and beginner level concepts of Database and operating systems

### Methods of assessment
- Presentation 50%
- Final written exam 50%

### Applicability of module
Elective in WIB and WNB bachelor courses

### Person responsible for module
**Prof. Dr. Thomas Marx**

**Lecturer**
Shanthal D’Mello MSc (BCM),
SAP HANA Consultant, SAP Germany

### Reading list (Core texts and recommended texts)
- *In-Memory Data Management: Technology and Applications* by Hasso Plattner and Alexander Zeier; ISBN 978-3-642-29575-1 [link]
**Title**: Innovation Management  
**Lecturer**: Dr. Elena Colceag (geb. Stefanova)  
**Schedule**: Open to all semester 2 SWS  
**ECTS Credits**: 3  
**Elective**:  
**Workload**:  
- Total: 90 hrs  
- Course: 22.50 hrs  
- Preparation: 67.5 hrs  

**Emphasis**:  
- Computer Science: low  
- Business Administration: medium  
- Fundamentals: high  
- Key Qualifications: medium  

**Preconditions**: Basics in Business Administration; Interest in new topics in the field of Strategic Innovations  
Ability to understand lecture in English and communicate in class/participate in discussions  

**Learning Objectives**: Students...  
- Become familiar with the concept of innovation management and its main fields of operation  
- Understand the different aspects of innovations and learn how to differentiate innovations  
- Understand the linkage between strategy and innovation  
- Learn how product and service innovations are generated and managed from a process-oriented perspective  
- Gain a basic understanding of how innovative ideas can be legally protected (patent management) incl. a deep-dive in the software industry  
- Apply their acquired knowledge in case studies on leading innovative companies and start-ups (AirBnB, Facebook, SnapChat, Spotify, Uber, etc.)  
- Develop their soft skills working in a team and preparing presentations  

**Content**:  
- Basic concepts related to Innovation Management  
- Distinctive characteristics of innovations  
- Types of innovations & innovation dimensions  
- Organization and implementation of innovations  
- Models of the innovation process  
- Classification of technologies & Technology indicators  
- Industry life cycle model & phases  
- Dominant design & Standardization  
- QWERTYnomics, Path dependency and Network effects  
- What is an Innovation Strategy?  
- Strategic goals and elements, 3 levels of innovation strategy  
- Red Queen Effect  
- Business model elements, Reasons for business model innovation  
- Pioneer- and follower strategies  
- Blue ocean strategies, Open innovation  
- Ambidexterity and dual business models  
- The system of Intellectual Property Rights (IPRs), IPRs in practice  
- Innovation culture as a "soft" factor in innovation management  
- Innovation promoters and innovation champions
| **Recommended Literature** | • Burr, W. (2004): Innovationen in Organisationen  
| **Forms** | • Lecture and case studies  
• Teamworking on case studies  
• Presentations |
| **Grading** | • Written case studies  
• Team presentation  
• Students can choose to submit cases and presentations either in German or English |
<table>
<thead>
<tr>
<th>Module</th>
<th>Innovations that change the world</th>
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<tbody>
<tr>
<td>Lecturer</td>
<td>Prof. Dr. Eduard Heindl</td>
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<td>Classification</td>
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<td>Workload</td>
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<tr>
<td></td>
<td>presence 30 h</td>
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<tr>
<td></td>
<td>preparation 50 h</td>
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<tr>
<td></td>
<td>preparation test 10 h</td>
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<td>Balance</td>
<td>Computer Science: medium</td>
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<td>Business administration: medium</td>
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<td>Other basic subjects: none</td>
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<td>Key qualifications: medium</td>
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<td>Requirement</td>
<td>Keine</td>
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<tr>
<td>Learning targets</td>
<td>Understanding what innovation is</td>
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<tr>
<td></td>
<td>Classification of innovations in economic life</td>
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<tr>
<td></td>
<td>Assessing the economic prospects of new ideas</td>
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<tr>
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<td>implementation process</td>
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<td></td>
<td>Historical significance</td>
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<tr>
<td>Content</td>
<td>Innovation, invention, discovery</td>
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<tr>
<td></td>
<td>Historical significance</td>
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<tr>
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<td>Social impacts</td>
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<td>Exemplary examples</td>
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<td>Potential assessment</td>
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<td>Growth description</td>
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<td>Internet and information age</td>
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<td></td>
<td>Future developments</td>
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<tr>
<td></td>
<td>Peter Watson, Ideas – a history of thought and invention from Fire to Freud, Orion 2006, ISBN: 0060935642</td>
</tr>
<tr>
<td>Methode of learning</td>
<td>Lecture with discussions</td>
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<tr>
<td>Grading</td>
<td>Test (PL)</td>
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</tbody>
</table>
Interactive Media Installations

Module code | Workload | Credits | Semester | Repetition | Duration
---|---|---|---|---|---
DM-28-2753 | 180 h | 6 | Variabel | SoSe | 1 Semester

Course

a) Interactive Media Installations

Language | Contact hours | Self-study | Class size
---|---|---|---
German / English | SWS / 45 h | 135 h | 18

Learning outcomes

After successfully completing the module, students will be able to ...

Knowledge:
→ name the basics of designing interactive media installations.
→ provide an overview of the existing development environments and techniques.

Comprehension:
→ understand essential design elements of interactive media installations.
→ understand the aesthetic and technical concepts of interactive media installations.

Application:
→ design interactive media installations.
→ technically implement interactive media installations.

Individual component content

a) Interactive Media Installations

- Existing development environments and techniques
- Essentials of designing interactive media installations
- Historical and contemporary works and concepts
- Conception and realisation of interactive media installations
Teaching methods

a) Interactive Media Installations
   - Seminar with practical group work

Prerequisites

a) Interactive Media Installations
   - None

Methods of assessment

a) Interactive Media Installations
   - Practical Work (A)  Graded assessment (credit points): 6

Applicability of module

Required elective module in:
   - Medieninformatik B.Sc.
   - OnlineMedien B.Sc.
   - Medienkonzeption B.A.
   - Musikdesign B.Mus.
   - Medieninformatik M.Sc.
   - Design Interaktiver Medien M.A.
   - MusicDesign M.A.
   - Alle Studiengänge der HFU
Person responsible for module / lecturer

Person responsible for module:
- Prof. Dr. Norbert Schnell

Full-time lecturers:

a) Interactive Media Installations
- Prof. Dr. Norbert Schnell
- Oliver Wolf

Reading list (core texts and recommended texts)

a) Interactive Media Installations
- Simanowski, R.: Digital Art and Meaning: Reading Kinetic Poetry, Text Machines, Mapping Art, and Interactive Installations
- Turkle, S.: The second self: Computers and the human spirit
- Antonelli, P.: Talk to me: Design and the Communication between People and Objects
- Kwastek, K.: Aesthetics of Interaction in Digital Art
<table>
<thead>
<tr>
<th><strong>Title</strong></th>
<th>Interkulturelle Kommunikation / Intercultural Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lecturer</strong></td>
<td>Regina Mühlich</td>
</tr>
<tr>
<td><strong>Schedule</strong></td>
<td>3rd Semester</td>
</tr>
<tr>
<td><strong>Workload</strong></td>
<td>Total: 90 hrs</td>
</tr>
</tbody>
</table>
| **Emphasis** | • Computer Science: low  
  • Business Administration: low  
  • Fundamentals: medium  
  • Key Qualifications: high |
| **Preconditions** | Good English Knowledge |
| **Learning Objectives** | Students...  
  • learn to understand the characteristics of communication  
  - verbal and nonverbal communication  
  - communication style  
  • Business Communication  
  - Conflict management  
  - Negotiating  
  • Project Management  
  - Planning a project  
  - Lead people and team building  
  - Motivation  
  • in an intercultural world  
  - your culture and others  
  • Job interview  
  • comprehend significant concepts such as cultural patterns, cultural taxonomies, ethnocentrism, cultural biases, adaption processes and culture shock  
  • know how cultural differences influence business relations, leadership styles, negotiations and decision making across cultures,  
  • develop cross-cultural sensitivity and intercultural competence skills by participating in interactive exercises, small group activities, self-exploration, and field studies. |
| **Content** | • Introduction to communication in an intercultural world  
  • The concepts of culture, culture shock and types of adaption  
  • Hofested’s taxonomy  
  • Cultural identity, ethnocentrism, stereotypes and prejudices  
  • Cultural standards:  
  - Examples: Middle East, China  
  - Benefits and risks  
  • Business relations, leadership styles, negotiations and decision making across cultures  
  • Components of intercultural competence |
Hoffmann, Schopper, Fitzsimons (2004), *Internationales Projektmanagement (Interkulturelle Zusammenarbeit)*  
Annegret Hugo-Becker, Henning Becker (2008), *Psychologisches Konfliktmanagement*  
| **Forms** | Lecture  
Exercises and small group activities  
Team working on case studies |
| **Grading** | Presentation  
Lecture |
Intercultural Competence in the Media Sector

Module code: DM-28-2545
Workload: 90 h
Credits: 3
Semester: Variabel
Repetition: WiSe/SoSe
Duration: 1 Semester

Course

a) Intercultural competence in the media sector

Language: German / English
Contact hours: SWS / 22,5 h
Self-study: 67,5 h
Class size: 16

Learning outcomes

After successfully completing the module, students will be able to ...

Knowledge:
→ explain the basic understanding for the phenomenon culture as a system of values and mindsets.

Comprehension:
→ describe the cultural own sensitisation.

Application:
→ apply a reflection of your own cultural behaviour patterns.

Analysis:
→ analyse intercultural misunderstandings by means of a different interpretation of communication signals.

Synthesis:
→ apply the cross-cultural value dimensions which are described on the basis of Hofstede and Trompenaar.
Individual component content

a) Intercultural competence in the media sector
   - Management styles
   - Basic understanding of the phenomenon of culture
   - Intercultural competence to act
   - Intercultural management competence
   - Cultural self-sensitisation of the participants
   - Cross-cultural value dimensions
   - Marketing and sales
   - Organisational forms and working methods
   - Personnel management and leadership

Teaching methods

a) Intercultural competence in the media sector
   - Seminar

Prerequisites

a) Intercultural competence in the media sector
   - None

Methods of assessment

a) Intercultural competence in the media sector
   - Presentation (PN)
   - Graded assessment (credit points): 3
Applicability of module

Required elective module in:
- Medieninformatik B.Sc.
- OnlineMedien B.Sc.
- Medienkonzeption B.A.
- Musikdesign B.Mus.

Person responsible for module / lecturer

Person responsible for module:
- Prof. Dr. Ullrich Dittler

Full-time lecturers:

a) Intercultural competence in the media sector
- Simon Huber

Reading list (core texts and recommended texts)

a) Intercultural competence in the media sector
- Blom, Herman; Meier, Harald: Interkulturelles Management: Interkulturelle Kommunikation, 2004
- Storti, C.: Cross-Cultural Dialogues. 74 Brief Entcounters with Cultural Diffenence, 1994
Name of Module: Internet of Things (Master)

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Workload</th>
<th>Credits</th>
<th>Semester of Study</th>
<th>Frequency of Course offered</th>
<th>Duration</th>
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<tbody>
<tr>
<td>1</td>
<td>180 hrs</td>
<td>6</td>
<td>2.</td>
<td>once a year</td>
<td>1 Semester</td>
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</table>

1 Module Components
- a) Internet of Things, lecture
- b) Internet of Things, exercises

<table>
<thead>
<tr>
<th>Language</th>
<th>Contact Hours</th>
<th>Self-study</th>
<th>Planned group size</th>
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</thead>
<tbody>
<tr>
<td>German</td>
<td>a) 2 SWS/22.5 hrs</td>
<td>a) 60 hrs</td>
<td>a) 30</td>
</tr>
<tr>
<td></td>
<td>b) 2 SWS/22.5 hrs</td>
<td>b) 60 hrs</td>
<td>b) 30</td>
</tr>
</tbody>
</table>

2 Intended Learning Outcomes

Knowledge (1)
Upon successful completion of this module students will be able to:
- describe the challenges and solutions for the Internet of Things and their classification into the different domains,
- evaluate different protocols and concepts relating to the use-case specific requirements,
- create a design solution for complex scenarios in the context of device communication.

Understanding (2)
Upon successful completion of this module students will be able to:
- evaluate the requirements regarding hardware, protocols and design for specific use-cases,
- classify the different domains of IoT,
- distinguish between IoT and M2M Communication.

Application (3)
Upon successful completion of this module students will be able to:
- create a design solution,
- develop an IoT device,
- establish a connection and a rule-based communication between devices and the cloud.

Analysis (4)
Upon successful completion of this module students will be able to:
- analyze the feasibility of selected IoT use cases in context of functional extend, performance, security requirements, etc.
- analyze the usability of IoT platforms for different use cases in the context of industry, smart home, or health

3 Academic Content

a) There are several aspects in the area of IoT to be considered. The following list of topics visualize the content of the lecture:
- Device communication design
- Load distribution and scaling
- Wireless networking of sensors/actors
- IoT-related cloud services and their technical capabilities
- Basic protocol concepts
- Application design for IoT use cases
- Embedded systems as related to IoT
- IoT platforms
- Security and privacy considerations
- Data analysis

b) In accompanying lab exercises should strengthen the knowledge about IoT. Current technological and scientific problems such as review of performance criteria, such as secure IoT infrastructures, etc. should not be disregarded.

Practical exercises are for example:
- Group exercise for designing new IoT applications
- Writing MQTT client applications
- Integrating new IoT devices into a IoT platform
- Data analysis example

4 Teaching Methods

a) Lectures

b) exercise lab course + seminar work

5 Module Prerequisites

Background in Object Oriented Programming, Databases and Computer Networks

6 Methods of Assessment

a) exam (3 LP)

b) lab exercises + seminar paper (3 LP)

7 Applicability of Module

Optinal course for master in computer science

8 Lecturer

Prof. Dr. Ch. Reich

9 Reading list

Introducion to process mining

1. Data science and big data
   a. Internet of events – content, people, things, places
2. Four generic data science questions:
   a. What happened?
   b. Why did it happen?
   c. What will happen?
   d. What is the best that can happen?
3. Data mining basics
   a. Supervised learning
   b. Unsupervised learning
   c. Examples: decision trees, association rules, clustering, regression
4. How data mining is related to process mining?
5. Event logs and process models
6. Petri nets
7. Transition systems
8. Dependency graphs
9. Causal nets
10. BPMN models
11. Evaluation and improvement of process models

PhD Eng. Mariusz Dramski
Knowledge Management and Robotics

Dr. Aladdin Ayesh
De Montfort University

The current vision of future technological advancements has identified 4 strands of challenges and development. These are: Cognitive Systems, Internet of Things, Big Data and Games. One may argue that these four has three common backbones data, mobility and automation. The rapid development in mobile networks infrastructure, protocols and technologies, has led to a flux of data generation. This growth in data meant that the requirements of data storage, management, and retrieval have become more demanding leading to such developments as seen in cloud computing and business intelligence, to give examples.

In this seminar series we will look at these four strands of challenges with particular focus on knowledge management from Artificial Intelligence perspective. Knowledge representation has been a primary theme in AI since its founding. To relate theory to practical applications we will use robotics, which will interject mobility and automation issues in our coverage of knowledge management.

The series is organised in 5 sessions. Each session consists of 3 activities: a lecture, a lab based research and practice, and a workshop. Students are expected to work in groups and explore during the research and practice activity resources available in terms of papers and facilities.

The 5 sessions will cover loosely most of the following topics:

**Topic-1:** Architectures
**Topic-2:** Knowledge-intensive robots (Cognitive Systems)
**Topic-3:** Reactive robots (Operational Research and Mobile Computing)
**Topic-4:** Platforms (Hardware and Software)
**Topic-5:** Applications (Project Proposals)
## Legal Economic Analysis

<table>
<thead>
<tr>
<th>Module code</th>
<th>Workload</th>
<th>Credits/CP</th>
<th>Semester</th>
<th>Frequency of module</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>180 h</td>
<td>6</td>
<td>1</td>
<td>Winter Semester</td>
<td>Semester</td>
</tr>
</tbody>
</table>

1. **Module**
   - Legal Economic Analysis

2. **Teaching Language**
   - English

3. **Contact hours**
   - 45 h

4. **Self-study**
   - 135 h

5. **Class size**
   - 30

### 2 Learning outcomes

After passing this module successfully, students are able to ...

**Knowledge (1)**
- list the key results in legal economic analysis.
- list the names of the key contributors to legal economic analysis.
- identify the type of jurisdiction in students’ home countries.

**Comprehension (2)**
- distinguish between civil and common law jurisdictions.
- understand the relationship between law and the functioning of business, commerce and industry.

**Application (3)**
- apply Legal-Economic Analysis in the development of business processes and procedures.
- apply Legal-Economic Analysis in ensuring that the goals of regulatory compliance are met.

**Analysis (4)**
- evaluate the goals of regulatory compliance.
- assess and distinguish non-compliances within an organisation.

**Synthesis (5)**
- develop and improve business processes and procedures within an organisation

**Evaluation (6)**
- evaluate regulation and law critically.

### 3 Individual component content

**Introduction to Legal Economic Analysis.**
- Relationship between economics and law.
- History and early results.
- Utility, rationality and game theory.
- Coase Theorem

**LEA of Property Law**
- Property Law as the basis of commercial activity.
- Evaluation of rights in disputes.

**LEA of Negligence Law**
- The resolution of negligence liability.
<table>
<thead>
<tr>
<th>LEA of Criminal Law</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Property crime and legal certainties.</td>
</tr>
<tr>
<td>● Computer crime protection approaches.</td>
</tr>
<tr>
<td>● Computer crime policies.</td>
</tr>
</tbody>
</table>

**LEA Informed Policy Design.**

| ● The elements of good policy. |
| ● Process design. |
| ● Ethics and regulatory compliance. |

<table>
<thead>
<tr>
<th>Teaching methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures, exercises and practices, presentations</td>
</tr>
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<table>
<thead>
<tr>
<th>Prerequisites</th>
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<thead>
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<tr>
<td>Final written exam, presentation, written term paper</td>
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<table>
<thead>
<tr>
<th>Applicability of module</th>
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<table>
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<tr>
<th>Person responsible for module/ lecturer</th>
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<tbody>
<tr>
<td>Prof. Dr. Leonard Noriega</td>
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</table>

<table>
<thead>
<tr>
<th>Literature</th>
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## Logistics- and Sales Processes in SAP (WPV)

<table>
<thead>
<tr>
<th></th>
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<th>Studiensemester</th>
<th>Frequency</th>
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<tr>
<td>1</td>
<td>60 h</td>
<td>2</td>
<td>3-6</td>
<td>Once a year</td>
<td>1 Semester</td>
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### Module Component
- Logistics- and Sales Processes in SAP

### Language
- E

### Contact hours
- 2 SWS / 22,5 h
- Self-Study: 45 h

### Group size
- 15

### Content
- Knowledge
  - explain the basics of enterprise resource planning (ERP) systems
  - explain the integration of the processes and their master data.
- Application / Analysis
  - use the insights in an ERP-system to create the master data and the transactions for logistics and sales processes for a manufacturing company.
- Evaluation
  - process a complex case study for sales, production and purchase processes

### Teaching methods
- Lectures with presentations, Exercises using a SAP education system with case studies of a manufacturing company

### Specific prerequisites
- Passed foundation level studies

### Assessment
- Processing a case study in SAP (1sbA)

### Module representative and lecturer
- Module representative: Kopp
- Lecturer: Kopp

### Literature
Media and Society

Module code: DM-28-2592

Credits: 6

Workload: 180 h

Semester: Variabel

Repetition: WiSe/SoSe

Duration: 1 Semester

Course

a) Media and society

Language: German / English

Contact hours: SWS / 45 h

Self-study: 135 h

Class size: 12

Learning outcomes

After successfully completing the module, students will be able to ...

Knowledge:

→ deal critically with media and their influence in the society.

→ realise the implications, effects, influence and contribution of media in the society and deal with them critically.

Comprehension:

→ understand the basics of media theory.

Application:

→ recognise media influence in daily life.

Analysis:

→ compare media and analyse their effects.

Synthesis:

→ recognise advantages and disadvantages of different media in the society.

→ deal with the media as active agents and do not consume them passively.
Individual component content

a) **Media and society**

- Basics and principles of media theory
- Reading and Analysis of Classics of Media Theory
- Reading comprehension analysis and summary of different essays in English language
- New media and gender
- New media and art
- Participatory critical approaches in the media
- Political influence and influence of the media
- Social aspects of the media
- Text analysis, comprehension and criticism
- Writing and summarising texts

Teaching methods

a) **Media and society**

- Seminar, group work

Prerequisites

a) **Media and society**

- Knowledge of English

Methods of assessment

a) **Media and society**

- Practical work (A)  

  Graded assessment (credit points): 6
Applicability of module

Required elective module in:
- Medieninformatik B.Sc.
- OnlineMedien B.Sc.
- Medienkonzeption B.A.
- Musikdesign B.Mus.

Person responsible for module / lecturer

Person responsible for module:
- Prof. Dr. Miguel Garcia

Full-time lecturers:

a) Media and society
- Prof. Dr. Miguel Garcia

Reading list (core texts and recommended texts)

a) Media and society
- Pias, Claus; Vogl, Joseph; Engell, Lorenz; Fahle, Oliver; Neitzel, Britta (Hrsg.): Kursbuch Medienkultur - Die maßgeblichen Theorien von Brecht bis Baudrillard, 4. Aufl., 2002; DVA, ISBN: 978-3-421-05310-7
- Colombo, Gary; Cullen, Robert; Lisle, Bonnie (Ed.): Rereading America - Cultural Contexts for Critical Thinking and Writing, 8th. Ed., Bedfort/St. Martin's, ISBN: 978-0-312-54854-4
Module: Medial Counterculture

Module code: DM-28-2546
Workload: 180 h
Credits: 6
Semester: Variabel
Repetition: WiSe/SoSe
Duration: 1 Semester

Course
Language: German / English
Contact hours: SWS / 22.5 h
Class size: 15

a) Medial counterculture
Self-study: 67.5 h

b) Medial counterculture, lab
Self-study: 67.5 h

Learning outcomes

After successfully completing the module, students will be able to ...

Knowledge:
→ identify countercultural movements exemplarily.
→ Learn about examples of conversion of countercultural trends in media contents.

Comprehension:
→ recognise basic mechanisms of delimitation between cultures and countercultural / subcultural movements.
→ differentiate methods of the medial implementation of countercultural concerns.

Application:
→ work out current references from media contents about the actual topics / projects of WPMs as well as filter contents of read texts and summarise, systemise and present essential aspects with regard to the topic of the event.
→ design and implement your own countercultural project.

Analysis:
→ read and understand, analyse and interpret longer texts from different disciplines and different types of authors.
→ analyse self-investigated examples of countercultural projects.

Synthesis:
→ implement the findings from the texts and discussed media projects into an own media project or a composition.
→ design and implement your own countercultural project.

Evaluation:
→ reflect and evaluate your own approach and its implementation in the product critically.
Individual component content

a) Medial counterculture
   - Introduction to the topic of counterculture
   - Counterculture in the current media
   - Countercultural example projects
   - Reasons and occasions for countercultural movements
   - Commercialisation of counterculture
   - New mechanisms of (media) counterculture on the internet
   - Strategies of countercultural movements

b) Medial counterculture, lab
   - Development of an own content approach for a countercultural project
   - Conception and implementation of an own countercultural media project
   - Critical reflection of the project during the tutorial
   - Presentation of the own counterculture project
   - Research and evaluation of examples of countercultural projects

Teaching methods

a) Medial counterculture
   - Seminar

b) Medial counterculture, lab
   - Tutorial

Prerequisites

a) Medial counterculture
   - None

b) Medial counterculture, lab
   - None
Methods of assessment

a) **Medial counterculture**
   - Event overlapping practical work (A)
   - Graded assessment (credit points): 6

b) **Medial counterculture, lab**
   - Event overlapping practical work (A)
   - Graded assessment (credit points): See course a)

Applicability of module

Required elective module in:
   - Medieninformatik B.Sc.
   - OnlineMedien B.Sc.
   - Medienkonzeption B.A.
   - Musikdesign B.Mus.

Person responsible for module / lecturer

Person responsible for module:
   - Prof. Dr. Christoph Zydorek

Full-time lecturers:

a) **Medial counterculture**
   - Prof. Dr. Christoph Zydorek

b) **Medial counterculture, lab**
   - Prof. Dr. Christoph Zydorek
Reading list (core texts and recommended texts)

a) Medial counterculture
   - Pörksen, B.; Dietel, H.: Der entfesselte Skandal, Herbert von Halem Verlag, 2012
   - Geiselberger, H. (Hg.): Wikileaks und die Folgen, Suhrkamp, 2011
   - Lasn, K.: Culture Jamming, Orange Press, 2005
   - Hessel, S.: Empört Euch, Ullstein Verlag, 2011

b) Medial counterculture, lab
   - Medienprodukte im gegenkulturellen Bereich als Texte, Audios, Videos, Animation etc.
   - Website: z.B. www.wikileaks.org/cryptome.org
   - Print: z.B. Lasn, Kalle (2005), Inspire Magazine
Methodology in Research and Design

Module code: DM-12-2701  Workload: 180 h  Credits: 6  Semester: 2  Repetition: SoSe  Duration: 1 Semester

Course

<table>
<thead>
<tr>
<th>Course</th>
<th>Language</th>
<th>Contact hours</th>
<th>Self-study</th>
<th>Class size</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Methodology in Research and Design, theoretical part</td>
<td>English</td>
<td>SWS / 22,5 h</td>
<td>52,5 h</td>
<td>20</td>
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<tr>
<td>b) Methodology in Research and Design, practical part</td>
<td>English</td>
<td>SWS / 22,5 h</td>
<td>82,5 h</td>
<td>20</td>
</tr>
</tbody>
</table>

Learning outcomes

After successfully completing the module, students will be able to …

Knowledge:

→ understand empirical research literature and theoretical models.

Comprehension:

→ understand aims of theoretical models and studies.

Application:

→ implement skills in small individual studies.

Analysis:

→ judge and verify models and results of empirical studies.

Synthesis:

→ understand the concepts of quantitative and qualitative methods as well as epistemological approaches.

Evaluation:

→ rank research work in the field of music design and make a plausibility check.
Individual component content

a) **Methodology in Research and Design, theoretical part**
   - Philosophy of science
   - Research and writing skills
   - Research areas: media science, music science etc.
   - Basic research about human perception and impact
   - Basic research in the social and applied psychology of music
   - Empirical studies - qualitative methods
   - Empirical studies - quantitative methods
   - Creation of empirical studies

b) **Methodology in Research and Design, practical part**
   - Practical experimentation with the topics covered by the course a).

Teaching methods

a) **Methodology in Research and Design, theoretical part**
   - Seminar

b) **Methodology in Research and Design, practical part**
   - Practical work

Prerequisites

a) **Methodology in Research and Design, theoretical part**
   - None

b) **Methodology in Research and Design, practical part**
   - None
Methods of assessment

a) Methodology in Research and Design, theoretical part
   - Course overarching practical work during the semester (sbA)
   Graded assessment (credit points): 6

b) Methodology in Research and Design, practical part
   - Course overarching practical work during the semester (sbA)
   Graded assessment (credit points): See course a)

Applicability of module

Required module in:
   - MusicDesign M.A. (SPO-Version: 10)

Person responsible for module / lecturer

Person responsible for module:
   - Prof. Dr. Norbert Schnell

Full-time lecturers:

a) Methodology in Research and Design, theoretical part
   - Prof. Dr. Norbert Schnell
   - Prof. Dr. Christina Zenk

b) Methodology in Research and Design, practical part
   - Prof. Dr. Norbert Schnell
   - Prof. Dr. Christina Zenk
Reading list (core texts and recommended texts)

**a) Methodology in Research and Design, theoretical part**
- Baur, Nina; Blasius, Jörg (Hg.): Handbuch Methoden der empirischen Sozialforschung, Wiesbaden, Sandberg, Berit: Wissenschaftliches Arbeiten von Abbildung bis Zitat. Lehr- und Übungsbuch für Bachelor, Master und Promotion, Berlin & Boston, 2017
- Burnard, Pamela; Mackinlay; Elizabeth; Powell, Kimberly (Eds.): The Routledge International Handbook of Intercultural Arts Research, London/New York, 2016
- Hallam, Susan; Cross, Ian; Thaut, Michael (Hg.): The Oxford handbook of music psychology. Oxford, 2011

**b) Methodology in Research and Design, practical part**
- See course a)
## Mobile Systems and Applications

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Workload</th>
<th>Credits</th>
<th>Semester of Study</th>
<th>Frequency of Course offered</th>
<th>Duration</th>
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<tbody>
<tr>
<td>1</td>
<td>180 h</td>
<td>6</td>
<td>4</td>
<td>Winter and Summer Term</td>
<td>1 Semester</td>
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</table>

### Module Components

- **a)** Lecture Mobile Systems and Applications
- **b)** Workshop Mobile Systems and Applications

<table>
<thead>
<tr>
<th>Teaching Language</th>
<th>Contact Hours</th>
<th>Independent Study</th>
<th>Planned Group Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>a) 2 SWS / 22,5 h</td>
<td>a) 67,5 h</td>
<td>a) 15</td>
</tr>
<tr>
<td></td>
<td>b) 2 SWS / 22,5 h</td>
<td>b) 67,5 h</td>
<td>b) 15</td>
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</tbody>
</table>

### Intended Learning Outcomes

**Knowledge:** After successfully attending the module, the students will be capable to...
- Identify potential usage scenarios of mobile systems e.g. smartphones, tablet computers, telematics and infotainment devices, and
- Classify these in the context of their specific properties

**Understanding:** After successfully attending the module, the students will be capable to...
- Recognize and describe basic architectures of mobile systems
- Evaluate and utilize mobility concepts and their specific protocols

**Application:** After successfully attending the module, the students will be capable to...
- Apply selected base technologies within various own examples

**Analysis:** After successfully attending the module, the students will be capable to...
- Assess the technical challenges and feasibility of innovative mobile applications

### Academic Content

- **a)** Driven by the ever increasing computing resources of mobile client devices the focus is on the availability, feasibility and impact of mobile end-to-end applications. The following topics are covered:
  - Introduction of basic technologies
  - Mobile multimedia systems
  - Enabling technologies, in particular mobile communication networks
  - System design
  - Adaptation to mobile environments
  - Context-Awareness
  - Location-Based Services
  - Disconnected Operations and Communication Mechanisms

- **b)** The workshop reveals deeper insights into selected topics and challenges of mobile systems and provides sufficient room for own experiments when solving exercises.

### Teaching Methods

- **a)** seminaristic lecture
<table>
<thead>
<tr>
<th>5</th>
<th>Pre-requisites</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Basic knowledge in topics such as computer networking, distributed infrastructures and basic programming skills</td>
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<tr>
<th>6</th>
<th>Methods of Assessment</th>
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<tr>
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<td>b)</td>
<td>PN (sb)</td>
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<tr>
<th>7</th>
<th>Applicable Course of Study</th>
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<tbody>
<tr>
<td></td>
<td>compulsory module in CNB</td>
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<td>elective module in AIB</td>
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<table>
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<tr>
<th>8</th>
<th>Lecturer</th>
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<tbody>
<tr>
<td></td>
<td>Prof. Dr. Elmar Cochlovius</td>
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<table>
<thead>
<tr>
<th>9</th>
<th>Indicative Learning Resources – Basic reading list</th>
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</thead>
</table>
Music for digital media

Module code | Workload  | Credits | Semester | Repetition | Duration
------------|-----------|---------|----------|------------|---------
DM-28-2754  | 180 h     | 6       | Variabel | WiSe/SoSe  | 1 Semester

Course Language Contact hours Self-study Class size
a) Music for digital media German / English SWS / 45 h 135 h 18

Learning outcomes

After successfully completing the module, students will be able to ...

Knowledge:
→ to name the basics of musical design in digital media.
→ provide an overview of tools and techniques for musical design in digital media.

Comprehension:
→ understand essential musical design elements in digital media.
→ to understand and anticipate the interaction between music and other media content and environments.

Application:
→ design and produce musical elements for existing media content or environments.

Analysis:
→ analyse existing works.
→ recognise design elements and techniques.

Individual component content

a) Music for digital media
- Basics of context-bound musical design
- Music for digital media and environments
- Existing approaches and works
- Musical means of design and production
- Digital tools and techniques
- Design and production of music for a given/selected context
Teaching methods

a) Music for digital media
   - Seminar with practical work (individually or in groups)

Prerequisites

a) Music for digital media
   - None

Methods of assessment

a) Music for digital media
   - Practical work during the semester (sbA)          Graded assessment (credit points):

Applicability of module

Required elective module in:
   - Medieninformatik B.Sc.
   - OnlineMedien B.Sc.
   - Medienkonzeption B.A.
   - Musikdesign B.Mus.
   - Medieninformatik M.Sc.
   - Design Interaktiver Medien M.A.
   - MusicDesign M.A.
   - Alle Studiengänge der HFU
Person responsible for module / lecturer

Person responsible for module:
- Prof. Dr. Norbert Schnell

Full-time lecturers:

a) Music for digital media
- Roland Sproll
- Prof. Dr. Norbert Schnell

Reading list (core texts and recommended texts)

a) Music for digital media
- Hentschel, Frank: Moormann, Peter (Hrsg.): Filmmusik: Ein alternatives Kompendium
- De la Motte-Haber, Helga: Klangkunst: tönende Objekte und klingende Räume
- Kalinak, Kathryn: Film Music: A Very Short Introduction
- Collins, Karen: Playing with sound: a theory of interacting with sound and music in video games
- Collins, Karen; Kapralos, Bill; Tessler, Holly (Hrsg.): The Oxford Handbook of Interactive Audio
- Lysaker, John T.: Brian Eno's Ambient 1: Music for Airports
<table>
<thead>
<tr>
<th>Module code</th>
<th>Workload</th>
<th>Credits/CP</th>
<th>Semester</th>
<th>Frequency of module</th>
<th>Duration</th>
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<tr>
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<td>1</td>
<td>Winter Semester</td>
<td>Semester</td>
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1. **Module**
   - An Introduction to Data Science

   **Teaching Language**
   - English

   **Contact hours**
   - 45 h

   **Self-study**
   - 135 h

   **Class size**
   - 30

2. **Learning outcomes**
   After passing this module successfully, students are able to ...

   **Knowledge (1)**
   - list the data types used in data science
   - show awareness of the basic statistical approaches.

   **Comprehension (2)**
   - exemplify the relationship between data and digital signals.
   - demonstrate the strength and weaknesses of different algorithms and approaches.

   **Application (3)**
   - explain and use appropriate descriptive statistics for different data types.
   - deploy appropriate methodologies for the analysis of data.

   **Analysis (4)**
   - differentiate the different approaches to data science in contemporary use.
   - analyse problems in order to know which machine learning techniques to deploy.

   **Synthesis (5)**
   - make predictions using signal analysis.
   - develop applications based on machine learning techniques.

   **Evaluation (6)**
   - test and evaluate machine learning algorithms and applications.

3. **Individual component content**

   **An Introduction to data, signals and algorithms.**
   - Data types
   - Algorithmic approaches.
   - Signal and sampling theory.

   **Basic Signal Processing**
   - Frequency domain transformations.
   - Operations in the frequency domain.

   **Machine Learning**
   - Unsupervised learning - distance measures and clustering.
   - Supervised learning - neural network learning.
   - Supervised learning - support vector machines.
<table>
<thead>
<tr>
<th>4</th>
<th><strong>Teaching methods</strong></th>
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<tbody>
<tr>
<td></td>
<td>Lectures, exercises and practices, presentations</td>
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<table>
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<tr>
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<th><strong>Prerequisites</strong></th>
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<tbody>
<tr>
<td></td>
<td>● Basic mathematics/statistics course.</td>
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<td></td>
<td>● Programming course.</td>
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<table>
<thead>
<tr>
<th>6</th>
<th><strong>Methods of assessment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Final written exam, presentation, written term paper</td>
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<table>
<thead>
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<table>
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<tbody>
<tr>
<td></td>
<td>Prof. Dr. Leonard Noriega</td>
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<table>
<thead>
<tr>
<th>9</th>
<th><strong>Literature</strong></th>
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<tr>
<td></td>
<td>● Relevant articles from academic journals.</td>
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## Smart Service Innovation

<table>
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<th>Credits/LP</th>
<th>Semester</th>
<th>Frequency of offering</th>
<th>Duration</th>
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<tr>
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<td>40 h</td>
<td>2 ECTS</td>
<td>3-6</td>
<td>every Semester</td>
<td>1 Semester</td>
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</table>

### 1 Courses
- Technologies in Service

### 2 Learning Outcome

All industries, including those that have not been conventionally defined as service industries, are increasing utilization of technology that can transform the core of their services. This course explores the ever evolving nature of technologies and smart services in the service industry. The course highlights how services and smart services can be improved through the effective use of technology, focusing on the benefits of effectively managing future technology applications enabling both organizations and customers in achieving service excellence.

### 3 Content
1. Future of Service Innovation
2. Service Systems Design
3. Remote Services
4. Service & Information Communication Technology
5. Cloud Services
6. Service Life Cycle Management
7. 3D Technologies
8. Virtual Reality
9. Augmented & Mixed Reality
10. Smart Technologies
11. Industrie 4.0
12. Blockchain & Cryptocurrencies

### 4 Teaching Methods
- Lessons

### 5 Participation Requirements
- None

### 6 Forms of Examination
- Test 60% and Paper 40%
- SbK + H

### 7 Usage of the module
- Elective Course
| 8 | **WPV Lecturer**  
  
|---|---|
| 9 | **Literature**  
  
  Future Service Management, 2009 Böhmann, Turel, Bremerich  
  Service Management & Marketing, Christian Grönroos  
  Introduction to Service Engineering, Salvendy & Karwoski  
  Service Science, Katzan  
  Introduction to Virtual Reality, John Vince, 2004  
  **Service Prototyping Publications (Abdel Razek)**  
  **Immersive Technologies Publications (Abdel Razek)** |
Sound Culture

Module code: DM-12-2702
Workload: 180 h
Credits: 6
Semester: 2
Repetition: SoSe
Duration: 1 Semester

Course

- a) Theories of Music Design
  - Language: English
  - Contact hours: SWS / 22.5 h
  - Self-study: 67.5 h
  - Class size: 20

- b) Subjects and Techniques of Music Design
  - Language: English
  - Contact hours: SWS / 22.5 h
  - Self-study: 67.5 h
  - Class size: 20

Learning outcomes

After successfully completing the module, students will be able to ...

Knowledge:
- know the fields of musical media practice and describe characteristics of music design.
- know relevant music-, media- and cultural scientific theories with regard to music design.

Comprehension:
- analyse and understand design processes as well as results.
- understand theoretical approaches to music design and their respective relevance.

Application:
- transfer the specific requirements of musical design to own projects.
- transfer relevant theoretical aspects to your own work.

Analysis:
- examine and systematically describe musical media practices, their subject matters and processes.
- reflect theoretical approaches from the perspective of the musical media practice.

Synthesis:
- understand and apply principles of music design as basis for quality of individual projects.
- develop a theoretical understanding against the background of different scientific approaches to music design.

Evaluation:
- evaluate design processes and results.
- identify and verify the validity of theories regarding perception, communication, and effectiveness.
Individual component content

a) Theories of Music Design
   - Theory of Music Design
   - Sound research in cultural studies
   - New musicology
   - Audio media culture
   - Psychoacoustics and phenomenology of sound and music
   - Listening modes
   - Aesthetical and phenomenological theories of listening
   - Acoustic communication
   - Immersion
   - Empirical studies of perception and aesthetics

b) Subjects and Techniques of Music Design
   - Framework model for music design
   - Practises in audio culture
   - Audio branding and acoustical identities
   - Music and sound design in film and video games
   - Sonification
   - Radio drama
   - Acoustical diagnosis
   - Sound environments and soundscapes

Teaching methods

a) Theories of Music Design
   - Seminar

b) Subjects and Techniques of Music Design
   - Seminar
Prerequisites

a) Theories of Music Design
   - None

b) Subjects and Techniques of Music Design
   - None

Methods of assessment

a) Theories of Music Design
   - Presentation (R) Graded assessment (credit points): 3

b) Subjects and Techniques of Music Design
   - Presentation (R) Graded assessment (credit points): 3

Applicability of module

Required module in:
   - MusicDesign M.A. (SPO-Version: 10)

Required elective module in:
   - Medieninformatik M.Sc.
   - Design Interaktiver Medien M.A.
Person responsible for module / lecturer

Person responsible for module:
- Prof. Dr. Norbert Schnell

Full-time lecturers:

a) **Theories of Music Design**
- Dr. Rainer Bayreuther

b) **Subjects and Techniques of Music Design**
- Dr. Rainer Bayreuther

Reading list (core texts and recommended texts)

a) **Theories of Music Design**
- Volmar, Axel; Schröter, Jens (Hg.): Auditive Medienkulturen. Techniken des Hörens und Praktiken der Klanggestaltung. Bielefeld, Transcript Verlag, 2013
- Schulze, Holger (Hg.): Sound Studies: Traditionen - Methoden - Desiderate. Eine Einführung. Bielefeld, Transcript Verlag, 2008
- Pinch, Trevor; Bijsterveld, Karin(Hg.): The Oxford Handbook of Sound Studies. London, Oxford University Press, 2011
- Sterne, Jonathan (Hg.): The Sound Studies Reader. London, Routledge, 2012

b) **Subjects and Techniques of Music Design**
- Spehr, Georg (Hg.): Funktionale Klänge. Hörbare Daten, klingende Geräte und gestaltete Hö rerfahrungen. Bielefeld, Transcript Verlag, 2009
# Technologies In Service

<table>
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<th>Course Number</th>
<th>Work load</th>
<th>Credits/LP</th>
<th>Semester</th>
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<td>1</td>
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<td>3-6</td>
<td>Every Semester</td>
<td>1 Semester</td>
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1. **Courses**
   - Technologies in Service

2. **Language**
   - English

3. **Contact time**
   - 2 SWS / 22.5 h

4. **Self-Study**
   - 37.5 h

5. **Group Size**
   - 15-20

### Learning Outcome

All industries, including those that have not been conventionally defined as service industries, are increasing utilization of technology that can transform the core of their services. This course explores the ever evolving nature of technology in the service industry, highlighting how services can be improved through the effective use of technology, focusing on the benefits of effectively managing future technology applications enabling both organizations and customers in achieving service excellence.

### Content

1. Future of Service
2. Remote Services
3. Service Systems
4. Service & ICT
5. Cloud Computing Services
6. Service Life Cycle
7. 3D Technologies
8. Virtual Reality
9. Augmented Reality
10. Smart Technologies

### Teaching Methods

Lessons

### Forms of Examination

Test 60% and Paper 40%

SbK + H

### Usage of the module

Elective Course
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<th>Version</th>
<th>Erstellt von</th>
<th>Freigabe (Datum/Kürzel)</th>
<th>Gültig ab</th>
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<td>04.06.2013</td>
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**WPV Lecturer**


**Literature**

- Future Service Management, 2009 Böhmann, Turel, Bremerich
- Service Management & Marketing, Christian Grönroos
- Introduction to Service Engineering, Salvendy & Karwoski
- Service Science, Katzan
- Introduction to Virtual Reality, John Vince, 2004
This is Germany
(FH 26307)
Jürgen Schwarz
Oberstudienrat a.D.

1.5 US credits / 3 ECTS

Learning objectives
The course aims to give students an overview of German history as well as of modern Germany’s political and economic system and social structures.

Content
1. Geography (situation in Europe, neighbouring states, topography, climate, mountains and rivers, federal states)
2. History (Holy Roman Empire of German Nation, Reformation, Prussia and Austria, Revolution and Napoleon, The Path to unification, Unification under Prussian lead, Imperial Germany and World War I, The Weimar Republic and Fascism’s rise, The Era of National Socialism and World War II, The Two German States, Integration with the West and European Reconciliation, Reunification)
3. Political System (Basic Law, political parties, electoral system, constitutional Bodies: Bundestag, Federal President, Federal Chancellor and the government, Bundesrat, Federal constitutional Court)
4. Culture (Fine Arts and Architecture, Literature, Music, Film)
5. Economy (Social Market Economy, social security, social partners/collective bargaining, Branches of Industry, Foreign Trade)
7. Society (Population, Women, Immigration and Integration, Church and Religion, The Media)

Recommended reading
- Facts About Germany, SocietätsVerlag
- Hand-outs as background material, accompanying the lecture topics

Forms
Lecture, group discussions

Grading
Written test, presentation
Department: LC

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<th>CEFR:</th>
<th>No. of Course:</th>
<th>Semester:</th>
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<td>placement test</td>
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**Lecturer:**
Staff of the Language Center (LC)

**Placement:**
Mandatory Online Placement Test to be completed before start of classes, online enrolment by the student himself/herself into the appropriate course.

Levels: DaF 1/1 (beginners-A1) and DaF 1/2 (A2-B1)

Students who have already completed the level B1 or are placed above B1 in the Placement test are exempted from the intensive course.

**Teaching method:**
Interactive, communication oriented

**Literature:**
- DaF 1/1: Berliner Platz neu: Der Einstiegskurs, Lektionen 1-6, Verlag: Klett-Langenscheidt
- DaF 1/2: Menschen A2 und B1: Selected lessons. Verlag: Hueber
- additional materials compiled and drafted by the LC
- Online exercises and materials based on the books
- supplementary materials: CDs, videos

**Prerequisites:** None. The Online Placement Test is mandatory, even for students with no prior knowledge of German. It allows the LC to get an accurate idea of each student's level.
Department: LC

<table>
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<th>Course Name:</th>
<th>DaF 2 German for every day and university</th>
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Lecturer:
Staff of the Language Center (LC)

Learning objectives:
be able to communicate simple facts using limited vocabulary and basic grammar structures
- to understand and produce simple texts concerning every-day-situations
- to understand and participate in simple structured communication

Course content:
- basic grammar 1
- every-day-communication at work and at university
- dates and time
- orientation, street-maps, way to work
- visiting Berlin
- holidays in Germany
- eating and drinking
- clothing, fashion, weather
- body and health
- information about Germany

Teaching method:
interactive, communication oriented

Literature:
- studio 21 A1, text and workbook, Verlag: Cornelsen
- additional materials compiled and drafted by the responsibles of LC
- Online materials and exercises based on the book
- supplementary materials: CDs, videos

Prerequisites:
- Placement test!
- Basic knowledge of German
- pre-semester intensive course DaF 1/1 is recommended
Course Name: DaF 3 German for every day and university

CEFR: A2

No. of Course: FH FU 10548 VS 10549

Semester: all

Course Type: Lecture

Hours per Week: 4 in Class + 3 Self-Study/NEO

Credits: 6

Status: Compulsory

Basis for Grade: Continual assessment of class participation and tests (NEO)(50%); final exam (50%)

Registration: yes

Lecturer:
Staff of the Language Center (LC)

Learning objectives:
be able - to communicate and discuss general subjects using simple grammar structures
  - to understand and produce texts dealing with general topics
  - to understand spoken language dealing with general topics

Content:
- text analysis
- basic grammar 2
- languages and biographies
- family relations, ways of living
- travelling and mobility
- leisure and entertainment, capitals of culture
- media
- emotions, body language
- world of work, inventions-inventors

Teaching method:
interactive, communication oriented

Literature:
- Studio 21 A2, text and workbook, Verlag: Cornelsen
- additional materials compiled and drafted by the responsibles of LC
- Online materials and exercises based on the book
- supplementary materials: CDs, videos

Prerequisites:
- Placement Test!!
- DaF-2 successfully completed or lower intermediate level of German
- pre-semester intensive course DaF 1/intermediate is recommended
Department: LC

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Course Type: Lecture

Hours per Week: 4 in Class + 3 Self-Study/NEO

Credits: 6

Status: Compulsory

Basis for Grade: Continual assessment of class participation and tests (NEO)(50%); final exam (50%)

Registration: yes

Lecturer:
Staff of the Language Center (LC)

Learning objectives:
be able - to deal spontaneously with most situations,
 - to communicate and discuss general subjects and current events
 - to give reasons and explanations for experiences and plans using simple grammar structures
 - to understand and produce texts dealing with general topics of personal or professional interest on the above level
 - to understand texts of everyday occurrences or job related language

Content:
- text analysis
- basic grammar 3 complete
- consumption and service industries in Germany
- food and health
- history and history of life
- meeting and migration
- men and women
- nature and environment

Teaching method:
interactive, communication oriented

Literature:
- Studio 21 B1, text and workbook, Verlag: Cornelsen
- additional materials compiled and drafted by the responsibles of LC
- Online materials and exercises based on the book
- supplementary materials: CDs, videos
Prerequisites:
Placement Test
DaF-3 completed successfully or lower intermediate level of German
(pre-semester intensive course DaF 1/2 is recommended)
Department: LC

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Lecturer:
Staff of the Language Center (LC)

Learning objectives:
be able - to master job application and interview in a German company
- to understand and produce texts dealing with business topics
- to use German almost fluently in business context

Content:
- text analysis (business section of newspapers)
- grammar specials as required
- job application and interview
- negotiating, business vocabulary
- writing reports, commercial correspondence
- watching/listening to programs on German economy
- current topics on German economy and its international relations
- presentations

Teaching method:
interactive, communication oriented

Literature:
- Sicher! Level B2, Verlag: Hueber
- workbook grammar and special knowledge of business vocabulary
- additional materials compiled and drafted by the responsibles of LC
- Online materials and exercises based on the book
- supplementary materials: CDs, videos

Prerequisites:
Placement test
DaF 4 successfully completed or intermediate level of German
## Course Name: DaF 6

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### Lecturer:
Staff of the Language Center (LC)

### Learning objectives:
- to improve German language skills on an academic level
- to obtain a differentiated assessment of language skills
- to gain additional skills for the further academic or professional career at home or abroad

### Content:
- text analysis
- grammar specials as required
- all topics derive from an academic and higher educational context and are tailored to the needs of academic life
- besides reading, listening, speaking there is a special focus on writing a clearly structured and coherent text about a special subject, stating an opinion on a specific question and making a case for it

### Teaching method:
interactive, communication oriented

### Literature:
- Sicher! C1, Verlag: Hueber, Kursbuch und Arbeitsbuch
- additional materials compiled and drafted by the responsible LC
- Online materials based on the book, supplementary materials: CDs, videos

### Prerequisites:

- Placement Test
- DaF 5 completed successfully or high level of German