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 degree programmes are taught (partly or completely) in English:

International Business Information Systems BSc
International Business Information Systems 100% English (hs-furtwangen.de)

Smart Systems MSc*
Smart Systems Master | Furtwangen University (hs-furtwangen.de)

Business Consulting MSc*
Business Consulting Master international (hs-furtwangen.de)

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

Content

1. Audio Environments
2. Blockchain Technologies and Applications
3. Business Continuity Management
4. Cloud Computing Technology
5. Cryptography
6. Data and Sservices
7. Digitalization and New Business Models
8. Electromagnets
9. Engergy Business
10. Games Development
11. Global Health
12. Hazardous Work and Fall Protection
13. In-Memory Computing aqnd Big Data with Regard to SAP HANA
14. Innovation Management
15. Innovations that Change the World
16. Int. Career Planning for Women
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. Medial Counterculture
26. Methodology in Research and Design
27. Mobile Systems and Appllications
28. Music for Digital Media
29. Signal Processing for Statistics and Data Science
30. Smart Systems Innovation
31. Sound Culture
32. Technologies in Service
33. This is Germany
34. German as a Foreign Language (DaF)
    a. DaF Alltag und Hochschule (A1)
    b. DaF Alltag und Hochschule (A2)
    c. DaF Alltag und Hochschule (B1)
    d. DaF Interkulturelle Kompetenz (B2)
    e. DaF Studium und Wissenschaft (B2/C1)
    f. DaF Technik und Ingenieurwesen (B2)
    g. DaF in Wirtschaft und Unternehmen (B2)
    h. DaF Arbeitswelt und Gesellschaft (B2)
    i. DaF Arbeitswelt und Gesellschaft (C1)

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: 11)
- 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
- Chion, Michel: Sound: An Acoulogical Treatise, Duke University Press, 2016
- Murray Schafer, Raymond: The Soundscape: Our Sonic Environment and the Tuning of the World, Inner Traditions - Bear & Co, 1993
- Daniel, Jérôme; Nicol, Rozenn; Moreau, Sébastien: Further Investigations of High Order Ambisonics and Wavefield Synthesis for Holophonic Sound Imaging, Audio Engineering Society Convention Paper 5788, 2003
- 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/

https://www.fit.fraunhofer.de/en/fb/cscw/blockchain.html

Schedule

Blockchain Technologies and Applications			
Lecture	List of Topics	Workshop	Groupwork
1	Basic Blockchain concepts	Fraunhofer use case analysis framework	Collect use cases, apply Fraunhofer framework
2	Cryptography and decentralized systems		
3	Mechanics of Bitcoin		
4	Consensus mechanisms	Process diagrams for use cases	Develop Architecture Ethereum / IOTA
5	Smart contracts		
6	Smart contract patterns		
7	Blockchain infrastructures	Proof of concept for use case	Proof of concept for use case
8	Trends in Blockchain technologies		
9	Summary		

Security & Safety Engineering Bachelor

Business Continuity Management (SSM)					
Kennummer	**Workload** 90 h	**Credits** 3	**Studien-semester** 2	**Häufigkeit des Angebots** Jährlich	**Dauer** 1 Semester

1	**Lehrveranstaltungen**	**Kontaktzeit**	**Selbststudium**	**geplante Gruppengröße**
	Business Continuity Management	2 SWS / 22,5 h	67,5 h	15 Students

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)**

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
	Döbbeling		01.04.2016

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.
4	**Lehrformen** Lectures, Working groups, Best praxis examples
5	**Teilnahmevoraussetzungen** Competence in English language Basic knowledge of methods like risk management, process planning, quality management.
6	**Prüfungsformen** Written paper in English language on a BCM topic
7	**Verwendung des Moduls** Optional module in Safety & Security Engineering Master
8	**Modulbeauftragte/r und hauptamtlich Lehrende** Prof. Dipl.-Ing. Ernst-Peter Döbbeling
9	**Literatur** 1. ISO 22300 Societal Security – Terminology 2. ISO 22301 Societal Security – Business continuity management systems – Requirements 3. ISO 22313 Societal Security – Business continuity management systems – Guidance 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

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
	Döbbeling		01.04.2016

HOCHSCHULE FURTWANGEN UNIVERSITY HFU

Module Title: Cloud Computing Technology (Bachelor)

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
	180 h	6		once a year	1 Semester

	Module	Teaching Language	Contact hours	Self-study	Class size
1	a) Lecture b) Seminar	English	a) 2 SWS / 22.5 h b) 2 SWS/ 22.5h	a) 68.5 h b) 68.5 h	30

2 Learning outcomes

Students, who completed this module are able to

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

3 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.

4 Teaching methods

Seminar: lecturing and workshop

5 Prerequisites

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
1.3	jr	QM-Board 11.4.2012, 16.01.2013 04.06.2013/jr	04.06.2013

	Java, Networking
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

HOCHSCHULE FURTWANGEN UNIVERSITY HFU

Signals & Systems II

Module Code	Workload	Credits	Semester	Frequency of Module	Duration
	180 hrs.	6	2	Only summer semester	1 Semester

1	Module Components	Teaching Language	Contact Hours	Self Study	Class Size
	a) Cryptology	a) English	a) 22,5 hrs.	a) 37,5 hrs.	a) 24
	b) Cryptology Exercise	b) English	b) 11,25 hrs.	b) 48,75 hrs.	b) 24
	c) Micro Optics	c) English	c) 22,5 hrs.	c) 37,5 hrs.	c) 24

2 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 crypto graphical 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

3 Individual Component Content

a)
- design criterias 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)** a) Stallings, William: Cryptography and network security : principles and practice, 5. ed., international ed., Prentice Hall 2011 b) Stallings, William: Cryptography and network security : principles and practice, 5. ed., international ed., Prentice Hall 2011 c) Hecht, H.: Optics, Addison-Wesley 2005 Zappe, Hans P.: Fundamentals of micro-optics, Cambridge University Press 2010 Herzig, Hans-Peter: Micro-Optics: Element systems and applications, Taylor & Francis Verlag, 1998

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Titel des Moduls	Data and Services				
Kennnummer	Workload	Credits/LP	Studiensemester	Häufigkeit des Angebots	Dauer
	90 h	3	>2		1 Semester

1	Lehrveranstaltungen	Sprache	Kontaktzeit	Selbst-studium	geplante Gruppengröße
	a)	Englisch	a) 2 SWS / Y h	a) 67.5 h	<15

2 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.

3 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

4 Lehrformen Lectures and exercises

5 Teilnahmevoraussetzungen

6 Prüfungsformen

Assessment of the exercises as well as an oral examination

7 Verwendung des Moduls

Als Wahlpflichtmodul für die Masterstudiengänge von WING

8 Modulbeauftragte/r und hauptamtlich Lehrende

Saed Imran

9 Literatur

1. Elmasri and Navathe: Fundamentals of Database Systems, 7th Ed., Pearson, ISBN 9780133970, 2016
2. The Kimball Group Reader: Relentlessly Practical Tools for Data Warehousing and Business Intelligence Remastered Collection, ISBN 9781119216315

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
1.3	jr	QM-Board 11.4.2012, 16.01.2013 04.06.2013/jr	04.06.2013

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?

Session 1	**Session 2**	**Session 3**
Friday, 05.04.2019	Friday, 26.04.2019	Friday, 07.06.2019
Saturday, 06.04.2019	Saturday, 27.04.2019	
Each from 9:30 am – 3:30 pm	*Each from 9:30 am – 3:30 pm*	*From 9:00 am – 3:30 pm*

HOCHSCHULE FURTWANGEN UNIVERSITY HFU

Module Title Electromagnets						
Module code	Workload	Credits/CP 3 ECTS	Semester 4-6 (B.Sc.) 1-3 (M.Sc.)	Frequency of module WiSe/SuSe		Duration 1 Semester
1	Module Electromagnetic drives in Mechatronics / Electromagnets	Teaching Language German, if required also in English		Contact hours a) 2 SWS / 22,5 h	Self-study a) 67,5 h	Class size a) 5 - 15

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 magnetical 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 electromagnetical 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

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
	Sören Rosenbaum (Übersetzung was)		

	- 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) [1] Kallenbach, E.; Eick, R.; Quendt, P.; Ströhla, T.; Feindt, K.; Kallenbach, M.; Radler, O.: Elektromagnete. Grundlagen, Berechnung, Konstruktion, Anwendung. 4. Aufl. Wiesbaden: Vieweg+Teubner , 2011 [2] Stölting, H.-D.; Kallenbach, E.: Handbuch Elektrische Kleinantriebe, 4. Aufl. München: Hanser Verlag, 2011 [3] Michalowski, L., Schneider, J.: Magnettechnik: Grundlagen, Werkstoffe, Anwendungen. 3. Aufl. Essen: Vulkan Verlag, 2005 [4] Seitz, D.; Ross, G.; Cassing, W.; Kuntze, K.: Technische Dauermagnete. Renningen: Expert-Verlag, 2006 [5] Isermann, R.: Mechatronische Systeme: Grundlagen. 2. Aufl. Berlin: Springer, 2007 [6] Roddeck, W.: Einführung in die Mechatronik. 3. Aufl. Wiesbaden: Vieweg+Teubner, 2006 ***English references:*** [7] Stoelting, Kallenbach, Amrhein (Eds.): Handbook of Fractional-Horsepower Drives, Section 4.1 Electromagnets. Berlin, Heidelberg, New York: Springer, 2008 [8] Brauer: Magnetic Actuators and Sensors. Hoboken, NJ: Wiley, 2014

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
	Sören Rosenbaum (Übersetzung was)		

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			
literature	● Energy Technology Innovation: Learning from Historical Successes and Failures, Arnulf Grübler, Cambridge University Press (2013) ● 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			

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Games Development					
Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
DM-284-2511-13	180 h	6	Variable	WiSe/SuSe	1 Semester

	Module	Teaching Language	Contact hours	Self-study	Class size
1	a) Games Development 2D	German/English	a) 2 SWS / 22,5 h	a) 67,5 h	a) 20
	b) Games Development 3D	German/English	b) 2 SWS / 22,5 h	b) 67,5 h	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

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
1.0	was	00.00.2016	00.00.2016

	- integration and manipulation of sound - working with Unity3D components
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:

	a) Games Development 2D - Prof. Jirka Dell'Oro-Friedl b) Games Development 3D - Prof. Jirka Dell'Oro-Friedl
9	Reading list (Core texts and recommended texts) a) Games Development 2D - Script - Rosenzweig, Gary: ActionScript 3.0 Game Programming University, 2011 b) Games Development 3D - see activity a) - Blackman, Sue: Beginning 3D Game Development with Unity 4, 2013

WPV Global Health Social and Public Health Context					
Number WPV	**Workload** 90 h	**Credits** 3	**Study-semester** 6/7	**Frequency** Every term	**Duration** 1 Semester

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

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
1	rebi	Rebi 25.2.2016	SoSe 2016

	Seminar
5	**Teilnahmevoraussetzungen** Successful completion of 4th semester
6	**Type of exam** Presentation during the term (semesterbegleitendes Referat sbR) and seminar paper (Hausarbeit)
7	**Utilisation of this module** This module is open to students from other faculties as well, depending on the respective study programme of the faculties.
8	**Professor in charge:** Prof. Dr. Birgit Reime **Lecturers:** Birgit Reime with Aileen Ashe, MPH and Charlotte Adamczyk, MD, MSc
9	**Literature:** Recommended: 1. Laaser U, Brand H. Global health in the 21st century. Global Health Action. 2014; 7:23694. 2. Eichbaum Q, Hoverman A, Cherniak W, et al. Career opportunities in global health: A snapshot of the current employment landscape. Journal of Global Health. 2015; 5:010302. 3. Walker RJ, Campbell JA, Egede LE. Effective strategies for global health research, training and clinical care: a narrative review. Global Journal Health Sciences. 2014; 7:119-39. 4. Koplan JP, Bond TC, Merson MH, et al; Universities for Global Health Executive Board. Towards a common definition of global health. Lancet; 373: 1993-5. 5: Ali MK, Grund JM, Koplan JP; Emory Global Health Case Competition Planning Committee. Case competitions to engage students in global health. Lancet. 2011; 377:1473-4. 6. Global Burden of Disease Study 2013 Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet. 2015; 386:743-800.

Security & Safety Engineering Bachelor

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

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
1.3	jr	QM-Board 11.4.2012, 16.01.2013 04.06.2013/jr	04.06.2013

Security & Safety Engineering Bachelor

4	**Teaching methods** Seminar
5	**Prerequisites** Safety 1 (recommended) Safety 2 (recommended)
6	**Methods of assessment** 1 sb K Klausur 1 sb A praktische Arbeit
7	**Applicability of module** Wahlpflichtveranstaltung im Bachelor-Studiengang Security & Safety Engineering, Wahlpflichtmodul in anderen Studiengängen. Die Anrechenbarkeit richtet sich nach den Vorgaben der jeweiligen Prüfungsordnung
8	**Person responsible for module/ lecturer** Prof. Dr. Stephan Lambotte
9	**Reading list (Core texts and recommended texts)** EN-standard and national safety regulations. Details will be given by the lecturer

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Module Title: In-memory computing and big data with regard to SAP HANA

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
	180 h	6	3 and higher	Every semester	1 Semester

	Module: In-memory computing and big data with regard to SAP HANA	Teaching Language	Contact hours	Self-study	Class size
1		EN	45 h	135 h	45

2 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

3 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

4	**Teaching methods** • Lectures with Demos and Customer stories • Exercises and practice in the SAP HANA System • Presentations & discussion on real time customer implementations
5	**Prerequisites** • Open to learn basic SQL programing and beginner level concepts of Database and operating systems
6	**Methods of assessment** • Presentation 50% • Final written exam 50%
7	**Applicability of module** Elective in WIB and WNB bachelor courses
8	**Person responsible for module** Prof. Dr. Thomas Marx **Lecturer** Shanthal D´Mello MSc (BCM), SAP HANA Consultant, SAP Germany
9	**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] • SAP HANA: An introduction by Dr Bjarne Berg and Penny Silvia , SAP Press; ISBN 978-1-4932-1164-7 [link] • Predictive Analysis with SAP: The comprehensive guide by John Mac Gregor; ISBN: 978-1-59229-915-7 [link] • Implementing SAP HANA by Jonathan Haun, Chris Hickman, Don Loden, Roy Wells; ISBN 978-1-4932-1176-0 [link] • Online resource: http://hana.sap.com/

<table>
<tr><td colspan="5">HOCHSCHULE FURTWANGEN UNIVERSITY

Fakultät Wirtschaftsinformatik</td></tr>
<tr><td>Title</td><td colspan="4">Innovation Management</td></tr>
<tr><td>Lecturer</td><td colspan="4">Dr. Elena Colceag (geb. Stefanova)</td></tr>
<tr><td>Schedule</td><td>Open to all semester</td><td>2 SWS</td><td>3 ECTS Credits</td><td>Elective</td></tr>
<tr><td>Workload</td><td>Total: 90 hrs</td><td>Course:
22,50 hrs</td><td>Preparation:
67,5 hrs</td><td></td></tr>
<tr><td>Emphasis</td><td colspan="4">• Computer Science: low
• Business Administration: medium
• Fundamentals: high
• Key Qualifications: medium</td></tr>
<tr><td>Preconditions</td><td colspan="4">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</td></tr>
<tr><td>Learning Objectives</td><td colspan="4">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</td></tr>
<tr><td>Content</td><td colspan="4">• 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</td></tr>
</table>

Recommended Literature	• Burr, W. (2004): Innovationen in Organisationen Hauschildt, J., Salomo, S. (2007): Innovationsmanagement. Vahlen, 4. Ed. Vahs, D., Burmester, R. (2005): Innovationsmanagement. Schäffer-Poeschel, 3. Ed. • Corsten, H., Gössinger, R., Schneider, H. (2006): Grundlagen des Innovationsmanagements. Vahlen, 1. Ed. • Gerybadze, A. (2004): Technologie- und Innovationsmanagement. Vahlen, 1. Ed. Wolf, J. (2008): Organisation, Management, Unternehmensführung. Gabler, 3. Ed.
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

HOCHSCHULE FURTWANGEN UNIVERSITY				
Module	**Innovations that change the world**			
Lecturer	Prof. Dr. Eduard Heindl			
Classification	4. Semester	2 SWS	3 credits	WPV
Workload	Sum 90 h	presence 30 h	preparation 50 h	prparation trest 10 h
Balance	Computer Science: medium Business administration: medium Other basic subjects: none Key qualifications: medium			
Requirement	Keine			
Learning targets	● Understanding what innovation is ● Classification of innovations in economic life ● Assessing the economic prospects of new ideas ● implementation process ● Historical significance			
Content	● Innovation, invention, discovery ● Historical significance ● Social impacts ● Exemplary examples ● Potential assessment ● Growth description ● Internet and information age ● Future developments			
Books	● Peter Thiel, Zero to One: Notes on Startups, or How to Build the Future Hardcover – September 16, 2014 Blake Masters, ISBN-13: 978-0804139298 ● Peter Watson, Ideas – a history of thought and invention from Fire to Freud, Orion 2006, ISBN: 0060935642 ● John H. Lienhard, How Invention Begins: Echoes of Old Voices in the Rise of New Machines, 2006 Oxford University Press, ISBN 0-19530599-X ● Jared Diamond, Guns, Germs, and Steel. The Fates of Human Societies. Norton & Company, 1997, ISBN: 0393317552			
Methode of learning	Lecture with discussions			
Grading	• Test (PL)			

HOCHSCHULE FURTWANGEN UNIVERSITY HFU

International Career Planning for Women

Kennnummer	Workload	Credits/LP	Studiensemester	Häufigkeit des Angebots	Dauer
	90 h	3		Each semester	1 Semester

1	Lehrveranstaltungen	Language	Contact Hours	Self Study	Class size
	a) Online Sessions **b) 1 face-to-face Workshop**	English	a) 22,5 hrs.	a) 67,5 hrs.	**15**

2 Lernergebnisse (learning outcomes) / Kompetenzen

In this lecture requirements for "international careers for women" will be presented and on that basis the students will analyze their own current portfolio and create their own career development plan based on what their goals are. This will be done based on a specific individually chosen international career position.

3 Content

- **International Career Planning for Women**
  - **What is required for an International Career - important elements**
    - **Work on your personal Skills and create your own Development Plan for an International Career** – as we go along in the seminar
      - What is your Dream Job in international Business or Science - Goals
      - Professional area of Interest & Experience
      - Communication: Job Talk in Business- Women & Men
      - Negotiation Skills
      - Develop Your Leadership Style
      - Networking
      - Mentor - you need one – period!
      - Online Image
      - How to find these Jobs
  - **Individual Coaching Session for each student for her career plan**

4 Lehrformen

a) Seminar

5 Prerequisites

None

6	**Methods of Assessment** a) Graded Assessment 1A = Ausarbeitung (Practical Work) (3 LP)
7	**Applicability of Module** International Students, open to WI and other departments from Furtwangen, Schwenningen & Tuttlingen
8	**Person Responsible for Module** Prof. Gabriele Hecker (Module Responsible)
9	**Literature** Global Female Leaders summit (2021): Global Female Leaders - The Economic Forum For Female Executives. Verfügbar unter https://www.globalfemaleleaders.com/ Hofstede, Geert; Hofstede, Gert Jan; Minkov, Michael (2010): Cultures and organizations: Software of the mind : intercultural cooperation and its importance for survival. New York, N.Y.: McGraw-Hill. Marcus, Bonnie R. (2019): The politics of promotion: How high-achieving women get ahead and stay ahead. Ro, Christine (2021): How the salary 'ask gap' perpetuates unequal pay. Verfügbar unter https://www.bbc.com/worklife/article/20210615-how-the-salary-ask-gap-perpetuates-unequal-pay Robertson, Margaret E. (2016): Communicating, Networking, Interacting: The International Year of Global Understanding - IYGU. New York: Springer (SpringerBriefs in Global Understanding Series) Ross-Parker, Bonnie (2012): 42 rules for effective connections (2nd edition): For women who are serious about building their. Super Star Press. Situational Leadership® Management and Leadership Training (2021): The Situational Leadership® Model | Center for Leadership Studies. Verfügbar unter https://situational.com/situational-leadership/ Tannen, Deborah (2013): You just don't understand: Women and men in conversation. 1. Aufl. New York: William Morrow. Women for Women International (2021): Careers. Verfügbar unter https://womenforwomen.org.uk/careers Zippel, Kathrin (2017): Women in Global Science: Advancing Academic Careers through International Collaboration. Stanford, CA: Stanford University Press.

Interactive Media Installations

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

Course	Language	Contact hours	Self-study	Class size
a) Interactive Media Installations	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

- De Campo, Alberto; Hentschel, Ulrike; King, Dorothee; Kufus, Axel: Play:test. Versuche über die Kunst des Experimentierens, Verlag der Universität der Künste Berlin, 2013
- Klanten, R.; Ehmann, S.; Hanschke, V.; Feireiss. L.: A Touch of Code: Interactive Installations and Experiences
- 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

HOCHSCHULE FURTWANGEN UNIVERSITY WIRTSCHAFTSINFORMATIK BACHELOR				
Title	**Interkulturelle Kommunikation / Intercultural Communication**			
Lecturer	Regina Mühlich			
Schedule	3rd Semester	2 SWS	3 Credits	Required Subject
Workload	Total: 90 hrs	Course: 30 hrs	Preparation: 40 hrs	Exam: 20 hrs
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			

	• Project Management and leadership
	• Developing intercultural competence skills
	  • Case studies, critical incidents
	  • Interactive exercises and small group activities
	  • Self-exploration
	  • Field studies

Recommended Literature	• Robert Gibson (2010), *Intercultural Business Communication*. • Dagmar Kumbier, Friedemann Schulz von Thun (2001), *Interkulturelle Kommunikation.* • Hoffmann, Schopper, Fitzsimons (2004), *Internationales Projektmanagement (Interkulturelle Zusammenarbeit)* • Annegret Hugo-Becker, Henning Becker (200ß), Psychologisches Konfliktmanagement • Deresky, H. (2011). *International Management: Managing Across Borders and Cultures, Text and Cases.* Boston: Pearson Education. • Samovar, L.A., Porter, R.E., McDaniel, E.R. (2009). *Communication between Cultures.* Boston: Wadsworth. • Hofstede, G., Hofstede, G.J. & Minkov, M. (2010). *Cultures and Organizations - Software of the Mind: Intercultural Cooperation and Its Importance for Survival.* McGraw-Hill Publishing Co.
Forms	• Lecture • Exercises and small group activities • Team working on case studies
Grading	• Presentation • Lecture

Intercultural Competence in the Media Sector

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

Course	Language	Contact hours	Self-study	Class size
a) **Intercultural competence in the media sector**	German / English	SWS / 22,5 h	67,5 h	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
- Hofstede, G. J.; Pedersen,P.; Hofstede, G.: Exploring Culture. Exercises, Stories and Synthetic Cultures, 2002
- Trompenaars, F.; Hampden-Turner, C.: Riding the Waves of Culture, 2012
- Storti, C.: Cross-Cultural Dialogues. 74 Brief Entcounters with Cultural Diffenence, 1994

HOCHSCHULE FURTWANGEN UNIVERSITY HFU

Name of Module: Internet of Things (Master)

Module Code	Workload	Credits	Semester of Study	Frequency of Course offered	Duration
	180 hrs	6	2.	once a year	1 Semester

1	Module Components	Language	Contact Hours	Self-study	Planned group size
	a) Internet of Things, lecture b) Internet of Things, exercises	German	a) 2 SWS/22.5 hrs b) 2 SWS/22.5 hrs	a) 60 hrs b) 60 hrs	a) 30 b) 30

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** • Volker P Andelfinger and Till Hänisch: Internet der Dinge: Technik, Trends und Geschäftsmodelle; Springer-Verlag, 2014. • Chris Anderson: Makers: Das Internet der Dinge: die nächste industrielle Revolution; Carl Hanser Verlag GmbH Co KG, 2013. • Arshdeep Bahga and Vijay Madisetti: Internet of Things: A Hands-On Approach; ISBN 978-0996025515. http://www.internet-of- things-book.com, 2014. • Alasdair Gilchrist; Industry 4.0 - The Industrial Internet of Things; Apress; ISBN-13 (pbk): 978-1-4842-2046-7 • Robert Stackowiak, Art Licht, Venu Mantha, Louis Nagode: Big Data and the Internet of Things - Enterprise Information Architecture for a New Age; Apress; ISBN: 978-1-4842-0987-5

Introduction to Deep Learning

Kennnummer	Workload	Credits	Studiensemester	Häufigkeit	Dauer
DM-28-2737	180 h	6	Variabel	WiSe	1 Semester

Veranstaltung	Sprache	Kontaktzeit	Selbststudium	Gruppengröße
a) **Introduction to Deep Learning, theoretical part**	Englisch	2 SWS / 22,5 h	67,5 h	12
b) **Introduction to Deep Learning, practical part**	Englisch	1 SWS / 11,25 h	78,75 h	12

Lernergebnisse

Nachdem Studierende das Modul erfolgreich abgeschlossen haben, können sie ...

Wissen / Kenntnisse:

→ beschreiben, was Deep Learning ist.

→ die Anwendungsmöglichkeiten benennen.

Verstehen:

→ Convolutional Neural Networks (CNN) charakterisieren.

→ Recurrent Neural Networks (RNN) charakterisieren.

Anwenden:

→ einfache CNN's mit Tensorflow implementieren.

→ einfache Sequence-to-Sequence Modelle implementieren.

Analyse:

→ die Wirkung verschiedener Hyperparameter analysieren.

Synthese:

→ für in der Praxis auftauchende Klassifikationsprobleme mit Deep-Learning-Techniken Lösungsvorschläge erarbeiten.

→ Lösungsvorschläge für sequentielle Daten erarbeiten.

Inhalte

a) Introduction to Deep Learning, theoretical part

- Linear Regression
- Logistic Regression
- Softmax Regression
- Neural Networks
- Convolutional Neural Networks (CNN)
- Backpropagation
- Recurrent Neural Networks
- Encoder-Decoder Networks
- Reinforcement Learning

b) Introduction to Deep Learning, practical part

- Alle Inhalte der Veranstaltung a) werden geübt und praktisch angewendet.

Lehrformen

a) Introduction to Deep Learning, theoretical part

- Vorlesung, Gruppenarbeit

b) Introduction to Deep Learning, practical part

- Praktikum

Teilnahmevoraussetzungen

a) Introduction to Deep Learning, theoretical part

- Keine

b) Introduction to Deep Learning, practical part

- Keine

Prüfungsformen

a) Introduction to Deep Learning, theoretical part

- Mündliche Prüfung (M) — Prüfungsleistung (in LP): 3

b) Introduction to Deep Learning, practical part

- Praktische Arbeit (A) — Prüfungsleistung (in LP): 3

Verwendung des Moduls

Wahlpflichtmodul in:

- Medieninformatik B.Sc.
- OnlineMedien B.Sc.
- Medieninformatik M.Sc.
- Alle Studiengänge der HFU

Modulbeauftragte/r und hauptamtlich Lehrende

Modulbeauftragte/r:

- Prof. Dr. Ruxandra Lasowski

Hauptamtlich Lehrende:

a) Introduction to Deep Learning, theoretical part

- Prof. Dr. Ruxandra Lasowski

b) Introduction to Deep Learning, practical part

- Prof. Dr. Ruxandra Lasowski

Literatur

a) Introduction to Deep Learning, theoretical part

- Goodfellow, Ian; Bengio, Yoshua; Courville, Aaron: Deep Learning, MIT Press, 2016
- Bishop, Chr.: Pattern Recognition and Machine Learning, Springer, 2006
- Aurélien Géron, Getting started with TensorFlow, O'Reilly
- Hands-on machine learning with Scikit-Learn and Aurélien Géron, TensorFlow: concepts, tools, and techniques for building intelligent systems, O'Reilly
- Abhishek, Nandy; Manisha, Biswas: Reinforcement Learning With Open AI, TensorFlow and Keras Using Python

b) Introduction to Deep Learning, practical part

- Siehe Veranstaltung a)

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 Unievrsity

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

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
	180 h	6	1	Winter Semester	Semester

1	Module	Teaching Language	Contact hours	Self-study	Class size
	Legal Economic Analysis	English	45 h	135 h	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.

	LEA of Criminal Law ● Property crime and legal certainties. ● Computer crime protection approaches. ● Computer crime policies. LEA Informed Policy Design. ● The elements of good policy. ● Process design. ● Ethics and regulatory compliance.
4	Teaching methods Lectures, exercises and practices, presentations
5	Prerequisites ● none
6	Methods of assessment Final written exam, presentation, written term paper
7	Applicability of module
8	Person responsible for module/ lecturer Prof. Dr. Leonard Noriega
9	Literature ● The Problem of Social Costs, Ronald Coase, The Journal of Law and Economics, Volume III, 1960. ● Principles and Methods of Law and Economics: Basic Tools for Normative Reasoning, Nicholas Georgakopoulos, Cambridge University Press, 978-0521534116. ● Economic Principles of Law, Cento Veljanovski, Cambridge University Press 2010, 978-0521695466. ● Economic Foundations of Law and Organisation, Donald Wittman, Cambridge University Press, 2006, 978-0521685245.

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Logistics- and Sales Processes in SAP (WPV)

	Workload	Credits	Studien-semester	Frequenncy	Duration
	60 h	2	**3-6**	Once a year	1 Semester

	Module Component	Language	Contact hours	Self-Study	Group size
1	Logistics- and Sales Processes in SAP	E	2 SWS / 22,5 h	45 h	15

2

The students joined the elective course Logistics- and Sales Processes in SAP successfully are able to …..

Knowledge

- explain the basics of enterprise resource planning (ERP) systems
- explain the integration of the processes and their master data.

Application /Analyzis/

- 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

3 Content

Basics of Enterprise Resource Planning systems / Basics of Business Processes / Navigation in SAP and working with the modules for sales and distribution, material management and production.

4 Teaching methods

Lectures with presentations, Exercises using a SAP education system with case studies of a manufacturing company

5 Specific prerequisites

Passed foundation level studies

6 Assesment

Processing a case study in SAP (1sbA)

7

8 Module representative and lecturer

Module representative: Kopp

Lecturer: Kopp

9 Literature

Leiting, Andreas (2012): Unternehmensziel ERP-Einführung. IT muss Nutzen stiften.
McConnell, Sydnie (2017): First Steps in SAP second edition. Espresso Tutorials

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
1.1	jr		

Medial Counterculture

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

Course	Language	Contact hours	Self-study	Class size
a) **Medial counterculture**	German / English	SWS / 22,5 h	67,5 h	15
b) **Medial counterculture, lab**	German / English	SWS / 22,5 h	67,5 h	15

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 it s 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
- Heath, J.; Potter, A.: Konsumrebellen – Der Mythos der Gegenkultur, Der Freitag Mediengesellschaft, 2009
- Doll, M.: Widerstand im Gewand des Hyper-Konformismus. Die Fake-Strategien von The Yes Men, in: Andreas Becker, Martin Doll, Serjoscha Wiemer u. a. (Hg.), Mimikry, Gefährlicher Luxus zwischen Natur und Kultur, Schliengen: Edition Argus 2008, S. 245-258

b) Medial counterculture, lab

- Medienprodukte im gegenkulturellen Bereich als Texte, Audios, Videos, Animation etc.
- Film: z.B. Die Yesmen (2005, 2009, 2014), Rihani Brothers (2014), Laura Poitras (2015)
- Website: z.B. www.wikileaks.org/cryptome.org
- Print: z.B. Lasn, Kalle (2005), Inspire Magazine
- Ausstellunen: z.B. Looking for Mushrooms, Museum Ludwig, Ausstellung und Katalog 2008

Methodology in Research and Design

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

Course	Language	Contact hours	Self-study	Class size
a) **Methodology in Research and Design, theoretical part**	English	SWS / 22,5 h	52,5 h	20
b) **Methodology in Research and Design, practical part**	English	SWS / 22,5 h	82,5 h	20

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:

→ understandthe 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: 11)
- 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
- Aeppli, Jürg; Gasser, Luciano; Gutzwiller, Eveline; Tettenborn, Annette: Empirisches wissenschaftliches Arbeiten. Ein Studienbuch für die Bildungswissenschaften. Bad Heilbrunn, Julius Klinkhardt, 2016
- Burnard, Pamela; Mackinlay; Elizabeth; Powell, Kimberly (Eds.): The Routledge International Handbook of Intercultural Arts Research, London/New York, 2016
- Colwell, Richard; Webster, Peter R. (Eds.): MENC Handbook of research on music learning. Vol.1 & 2: Strategies. New York: Oxford University Press, 2006
- 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)

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Mobile Systems and Applications

Module Code	Workload	Credits	Semester of Study	Frequency of Course offered	Duration
	180 h	6	4	Winter and Summer Term	1 Semester

1	Module Components	Teaching Language	Contact Hours	Independent Study	Planned Group Size
	a) Lecture Mobile Systems and Applications b) Workshop Mobile Systems and Applications	German	a) 2 SWS / 22,5 h b) 2 SWS / 22,5 h	a) 67,5 h b) 67,5 h	a) 15 b) 15

2 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

3 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.

4 Teaching Methods

a) seminaristic lecture

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
1.1	jr	QM-Board 11.4.2012, 16.01.2013	16.01.2013

	b) seminaristic lecture, homework assignments, team assignments and presentations
5	**Pre-requisites** Basic knowledge in topics such as computer networking, distributed infrastructures and basic programming skills
6	**Methods of Assessment** a) K, b) PN (sb)
7	**Applicable Course of Study** compulsory module in CNB elective module in AIB
8	**Lecturer** Prof. Dr. Elmar Cochlovius
9	**Indicative Learning Resources – Basic reading list** • Thomas Fuchß: Mobile Computing: Grundlagen und Konzepte für mobile Anwendungen, Hanser Verlag, ISBN 978-3-446-22976-1, 2009. • Dennis Krannich: Mobile System Design: Herausforderungen, Anforderungen und Lösungsansätze für Design, Implementierung und Usability-Testing Mobiler Systeme, Books on Demand, ISBN 978-3-8423-0724-7, 2010. • Jörg Roth: Mobile Computing: Grundlagen, Technik, Konzepte, Dpunkt Verlag, ISBN 978-3898643665, 2005. • Jochen Schiller: Mobile Communications, Pearson, ISBN 978-3827370600, 2009. • Ralf Steinmetz: Multimedia-Technologie, Springer, ISBN 3-540-62060-5, 1999.

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

Signal Processing for Statistics and Data Science

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
	180 h	6	1	Winter Semester	Semester

1	Module	Teaching Language	Contact hours	Self-study	Class size
	An Introduction to Data Science	English	45 h	135 h	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.

	Search Techniques ● Standard search approaches. ● Genetic Algorithms.
4	Teaching methods Lectures, exercises and practices, presentations
5	Prerequisites ● Basic mathematics/statistics course. ● Programming course.
6	Methods of assessment Final written exam, presentation, written term paper
7	Applicability of module Wherever applicable.
8	Person responsible for module/ lecturer Prof. Dr. Leonard Noriega
9	Literature ● "Neural Networks and Learning Machines", Simon Haykin, Pearson, 2008. ● "Machine Learning", Tom Mitchell, McGraw-Hill, 1997. ● "Pattern Recognition: Statistical, Structural and Neural Approaches", Robert Schalkoff, Wiley 1992. ● "Digital Image Processing", Rafael Gonzalez and Richard Woods, Addison Wesley, 2017. ● Relevant articles from academic journals.

Smart Service Innovation

Course Number	Work load	Credits/LP	Semester	Frequency of offering	Duration
26605	40 h	2 ECTS	3-6	every Semester	1 Semester

	Courses	Language	Conatct time	Self-Study	Group Size
1	Technologies in Service	English	2 SWS / 22.5 h	37,5 h	10-20

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

V

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** B.Eng. M.Sc. Abdul Rahman Abdel Razek
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 Augmented Reality, Greg Kipper, Joseph Rampolla, 31.12.2012 **Service Prototyping Publications (Abdel Razek)** **Immersive Technologies Publications (Abdel Razek)**

Sound Culture

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

Course	Language	Contact hours	Self-study	Class size
a) Theories of Music Design	English	SWS / 22,5 h	67,5 h	20
b) Subjects and Techniques of Music Design	English	SWS / 22,5 h	67,5 h	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 priciples 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 reserach 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 soudscapes

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: 11)
- 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

- Cox, Christoph; Warner, Daniel: Audio Culture. Readings in modern music. New York und London, Continuum, 2005
- 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
- Supper, A.; Bijsterveld, K.: Sounds Convincing: Listening Modes and Sonic Skills in Knowledge Making, Interdisciplinary Science Reviews, 40, 2, 124-143, 2015
- 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

- Bullerjahn, Claudia: Grundlagen der Wirkung von Filmmusik. Augsburg, Wißner: 2001
- Bronner, Kai; Hirt, Rainer (Hg.): Audio-Branding. Einwicklung, Anwendung, Wirkung akustischer Identitäten in Werbung, Medien und Gesellschaft (2. Nachdruck ed.). München, Reinhard Fischer, 2007
- Flückiger, Barbara: Sound Design. Die virtuelle Klangwelt des Films. Marburg, Schüren, 2001
- Hugill, Andrew: The digital musician. New York und London, Routledge, 2008
- Spehr, Georg (Hg.): Funktionale Klänge. Hörbare Daten, klingende Geräte und gestaltete Hörerfahrungen. Bielefeld, Transcript Verlag, 2009
- Stingel-Voigt, Yvonne: Soundtracks virtueller Welten. Musik in Videospiele. Glückstadt: Werner Hülsbusch, 2014 oder: Collins, Karen: Playing with sound. A theory of interacting with sound and music in video games. Cambridge, MIT Press, 2013

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Technologies In Service

Course Number	Work load	Credits/LP	Semester	Frequency of offering	Duration
	40 h	2 ECTS	3-6	Every Semester	1 Semester

	Courses	Language	Conatct time	Self-Study	Group Size
1	Technologies in Service	English	2 SWS / 22.5 h	37,5 h	15-20

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 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.

3 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

4 Teaching Methods

Lessons

V

5 Participation Requirements

None

6 Forms of Examination

Test 60% and Paper 40%
SbK + H

7 Usage of the module

Elective Course

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
1.3	jr	QM-Board 11.4.2012, 16.01.2013 04.06.2013/jr	04.06.2013

8	WPV Lecturer B.Eng. M.Sc. Abdul Rahman Abdel Razek
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 Augmented Reality, Greg Kipper, Joseph Rampolla, 31.12.2012

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Module Title This is Germany

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
FH 26307	4 h / week	3		Every Semester	1 Semester

	Module	Teaching Language	Contact hours	Self-study	Class size
1	This is Germany	English	2 SWS / 22.5 h	37,5 h	Max. 23

2 Learning outcomes

The aim of this course is to provide students with an overview of German history and the evolution of German culture from approximately 500 BCE to 2020 CE.

3 Individual component content

Geography (Location in Europe, neighbouring states, topography, climate, mountains and rivers, federal states)

History (Germanic tribes, Roman Conquest, Medieval Europe, the Holy Roman Empire, Reformation & the 30 Years War, 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, National Socialism and World War II, The Two German States, Integration with the West and European Reconciliation, Reunification)

Political System (Basic Law, political parties, electoral system, constitutional Bodies: Bundestag, Federal President, Federal Chancellor and the government, Bundesrat, Federal constitutional Court)

Culture (Fine Arts and Architecture, Literature, Music, Film, Religious influence in daily German life)

Economy (Social Market Economy, social security, social partners/ collective bargaining, Branches of Industry, Foreign Trade)

Education and Research (Preschool Education, School System, Vocational Training, Higher Education, German Nobel Prize Winners)

Society (Population, Women, Immigration and Integration, Church and Religion, the Media, The Impact of History and Geography on Behaviour and Character, Personalities and Bundesländer).

4 Teaching methods

a) Lectures

b) Group discussions

5 Prerequisites

None

6	**Methods of assessment** **In-class participation** **Final Presentation**
7	**Applicability of module** **Exchange students only**
8	**Person responsible for module/ lecturer** **Brigitte Minderlein & Andrew McDouall**
9	**Reading list (Core texts and recommended texts)** A Brief History of Germany by Jason P. Coy ISBN 978-0-8160-8142-4 (hardcover) ISBN 978-1-4381-3391-1 (e-book)

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Module Title DaF Alltag und Hochschule (A1)

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
	180 SWS (135 hrs)	6		Each semester	1 semester

1	Module	Teaching Language	Contact hours	Self-study	Class size
	DaF (A1)	German	60 SWS (45 hrs)	120 SWS (90 hrs)	23

2 Learning outcomes

The reference level of this module is A1according to the Common European Framework of Reference for languages (CEFR)

Knowledge

After successful completion of the module the students are able to:

- understand and use familiar everyday expressions and very simple phrases aimed at the satisfaction of needs of a concrete type.
- introduce him/herself and others and ask questions about personal details such as where he/she lives, people he/she knows and things he/she has, and respond to questions of this type.
- communicate in a simple way if interlocutors speak slowly and clearly and are willing to help.

Grammar and vocabulary at A1 level. Grammar taught is functional, i.e. related to functions and skills taught.

Comprehension

After successful completion of the module the students are able to:

Understand listening and reading texts featuring basic communication skills, friends and colleagues, describing a city, food, daily life and family, freetime activities, work life, health, living, holidays, regional studies.

Application

After successful completion of the module the students are able to use every day language:

- Can give, understand and react to information about the person and individual concrete situations.
- Can ask questions about the person and respond to appropriate questions.
- Can communicate in a simple way, using simple sentences and chunks.
- Can link words or groups of words using simple connectors such as 'and' or 'then'.

3 Component content:

- greet and introduce yourself
- make an appointment
- (Traffic) routes in the city
- shopping
- appointments and dates
- free time
- Family and Living
- everyday work life
- Health
- Communication in study and work
- Vacation

4	**Teaching methods** • Taught classes based on communicative group activities integrating all four skills (reading, writing, speaking and listening) • Monolingual, task-based, natural approach focusing on communication • Blended learning: guided online modules to be completed as self-study
5	**Prerequisites** a) No prerequisites, open for all language beginners without language knowlegde
6	**Methods of assessment** Written examination (50%) and practical work, e.g. presentations, projects, written assignments, and online work (50%)
7	**Applicability of module**
8	**Person responsible for module/ lecturer** Ms Stephanie Kahsay
9	**Reading list (Core texts and recommended texts)** Netzwerk neu A1 Klett-Sprachen (ISBN: 978-3-12-607155-0

Gez. Andrew McDouall / SoSe 2021

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
	Stephanie Kahsay	14.06.21 kah	WiSe21/22

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Module Title DaF Alltag und Hochschule (A2)

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
	180 SWS (135 hrs)	6		Each semester	1 semester

1	Module	Teaching Language	Contact hours	Self-study	Class size
	DaF (A2)	German	60 SWS (45 hrs)	120 SWS (90 hrs)	23

2 Learning outcomes

The reference level of this module is A2 according to the Common European Framework of Reference for languages (CEFR)

Knowledge

After successful completion of the module the students are able to:

- Use elementary sentence structures with memorized phrases, short word groups, and speech formulas to exchange limited information in simple everyday situations.
- ask and answer questions and respond to simple statements. Can indicate when he/she understands.

Grammar and vocabulary at A2 level. Grammar taught is functional, i.e. related to functions and skills taught.

Comprehension

After successful completion of the module the students are able to:

Understand listening and reading texts featuring basic communication skills, past, work, city life, media, feelings, every day activities

Application

After successful completion of the module the students are able to use every day language:

- Can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g. personal and family information, shopping, work, local area).
- Can communicate in simple, routine situations involving simple and direct exchange of information on familiar and routine matters.
- Can describe in simple terms own background and education, immediate environment and things related to immediate needs.
- Can use some simple structures correctly

3 Component content:

- Talk about the past
- Work
- Life in the city
- Media and entertainment
- Feelings
- Everyday life
- Learning
- Sports
- Appointments and time

4 Teaching methods

	• Taught classes based on communicative group activities integrating all four skills (reading, writing, speaking and listening) • Monolingual, task-based, natural approach focusing on communication • Blended learning: guided online modules to be completed as self-study
5	**Prerequisites** a) Successful completion of a level 1 course (DaF A1) with passing grade OR b) Passing the placement test for level 2
6	**Methods of assessment** Written examination (50%) and practical work, e.g. presentations, projects, written assignments, and online work (50%)
7	**Applicability of module**
8	**Person responsible for module/ lecturer** Ms Stephanie Kahsay
9	**Reading list (Core texts and recommended texts)** Netzwerk neu A2 Klett-Sprachen (ISBN: 978-3-12-607164-2)

Gez. Andrew McDouall / SoSe 2021

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
	Stephanie Kahsay	14.06.21 kah	WiSe21/22

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Module Title DaF Alltag und Hochschule (B1)

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
	180 SWS (135 hrs)	6		Each semester	1 semester

1	Module	Teaching Language	Contact hours	Self-study	Class size
	DaF (B1)	German	60 SWS (45 hrs)	120 SWS (90 hrs)	23

2 Learning outcomes

The reference level of this module is B1 according to the Common European Framework of Reference for languages (CEFR)

Knowledge

After successful completion of the module the students are able to:

- Cope with sufficient linguistic resources; vocabulary is sufficient to express oneself, albeit sometimes hesitantly and with the help of circumlocutions, on topics such as family, hobbies and interests, work, travel, and current events.
- Start, keep going, and finish a simple direct conversation on familiar topics or topics of personal interest. Can repeat parts of what someone has said to ensure mutual understanding.

Grammar and vocabulary at B1 level. Grammar taught is functional, i.e. related to functions and skills taught.

Comprehension

After successful completion of the module the students are able to:

Understand listening and reading texts featuring basic communication skills, friends and colleagues, describing a city, food, daily life and family, freetime activities, work life, living, holidays, regional studies.

Application

After successful completion of the module the students are able to use every day language:

- Can understand the main points when clear standard language is used and when dealing with familiar matters from work, school, leisure, etc.
- Can deal with most situations likely to arise whilst travelling in the language area.
- Can deal with most situations encountered when travelling in the language area.
- Can express him/herself simply and coherently on familiar topics and personal areas of interest.
- Can describe experiences and events, dreams, hopes and ambitions, and give brief reasons or explanations for plans and opinions.
- Uses simple structures correctly

3 Component content:

- Working environment
- Life in the city
- Media and entertainment
- Regional studies
- Everyday life
- Learning
- Sports
- Appointments and time

	•
4	**Teaching methods** • Taught classes based on communicative group activities integrating all four skills (reading, writing, speaking and listening) • Monolingual, task-based, natural approach focusing on communication • Blended learning: guided online modules to be completed as self-study
5	**Prerequisites** a) Successful completion of a level 2 course (DaF A2) with passing grade OR b) Passing the placement test for level 3
6	**Methods of assessment** Written examination (50%) and practical work, e.g. presentations, projects, written assignments, and online work (50%)
7	**Applicability of module**
8	**Person responsible for module/ lecturer** Ms Stephanie Kahsay
9	**Reading list (Core texts and recommended texts)** Netzwerk neu B1 Klett-Sprachen (ISBN: 978-3-12-607173-4)

Gez. Andrew McDouall / SoSe 2021

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Module Title: DaF Interkulturelle Kompetenz (B2)

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
	90 SWS (67,5 hrs)	3		Each semester	1 semester

1	Module	Teaching Language	Contact hours	Self-study	Class size
	DaF (B2)	German	30 SWS (22,5 hrs)	60 SWS (45 hrs)	18

2 Learning outcomes

The reference level of this module is B2 according to the Common European Framework of Reference for languages (CEFR)

Knowledge

After successful completion of the module the students are able to:

- Recognize own cultural patterns and norms.
- better recognize the causes of culture-related problems when communicating with partners from other cultures

Comprehension

After successful completion of the module the students are able to:

- Recognize their own cultural patterns and norms.
- Understand how intercultural communication works.
- Identify culture-related problems, especially in linguistic communication, and understand their causes.
- Understand German/European communication approaches and perspectives.

Application

After successful completion of the module the students are able to

- Actively intervene in the communication processes
- Identify, avoid and eliminate problems and their sources

3 Component content:

- Culture: What is culture? What is my culture? - Culture as part of my identity
- Intercultural communication: Prerequisites for successful communication, causes of misunderstandings; Different conventions; Valuations and stereotypes; Intercultural communication in (professional) everyday life
- Conventions in communication: Same word - different meaning
- Direct and indirect communication style
- Different registers and etiquette
- Values and norms

4 Teaching methods

- Taught classes based on communicative group activities integrating all four skills (reading, writing, speaking and listening)
- Monolingual, task-based, natural approach focusing on communication

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
	Stephanie Kahsay	14.06.21 kah	WiSe21/22

	• Blended learning: guided online modules to be completed as self-study
5	**Prerequisites** a) Successful Attendance of a level 4 course (DaF B2) during the same semester OR b) Successful completion of a level 4 course (DaF B2) with passing grade OR c) Passing the placement test for level 4
6	**Methods of assessment** Essay (50%) and practical work, e.g. presentations, projects, written assignments, and online work (50%)
7	**Applicability of module**
8	**Person responsible for module/ lecturer** Ms Mary Rose Kean-Matt
9	**Reading list (Core texts and recommended texts)** Erfolgreich in der interkulturellen Kommunikation (B2/C1), Cornelsen Verlag (ISBN: 978-3060202669)

Gez. Andrew McDouall / SoSe 2021

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Module Title: DaF Studium und Wissenschaft (B2/C1)

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
	90 SWS (67,5 hrs)	3		Each semester	1 semester

1	Module	Teaching Language	Contact hours	Self-study	Class size
	DaF (B2/C1)	German	30 SWS (22,5 hrs)	60 SWS (45 hrs)	18

2 Learning outcomes

The reference level of this module is B2/C1 according to the Common European Framework of Reference for languages (CEFR)

Knowledge

After successful completion of the module the students are able to:

- understand the characteristics of scientific language at the word, sentence, and text levels
- read and write on basic scientific texts
- find their way around the German university landscape

Comprehension

After successful completion of the module the students are able to:

Understand listening and reading texts connected to their field of study.

Application

After successful completion of the module the students are able to use scientific language:

- application of reading and writing strategies
- Use of everyday scientific language
- recognize and apply the grammar of scientific texts
- develop reading and writing skills

3 Component content:

- Study in Germany
- Communication at the university
- Language and characteristics of scientific texts
- Vocabulary work
- Reading strategies
- Writing and writing preparation

4 Teaching methods

- Taught classes based on communicative group activities integrating all four skills (reading, writing, speaking and listening)
- Monolingual, task-based, natural approach focusing on communication
- Blended learning: guided online modules to be completed as self-study

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
	Stephanie Kahsay	14.06.21 kah	WiSe21/22

5	**Prerequisites** a) Successful Attendance of a level 4 course (DaF C1) during the same semester OR b) Successful completion of a level 4 course (DaF B2) with passing grade OR c) Passing the placement test for level 4
6	**Methods of assessment** Essay (50%) and practical work, e.g. projects, written assignments, and online work (50%)
7	**Applicability of module**
8	**Person responsible for module/ lecturer** Ms Stephanie Kahsay
9	**Reading list (Core texts and recommended texts)** Richtig wissenschaftlich schreiben, UTB-Verlag (ISBN: 978-3825234294) Wissenschaftssprache verstehen, Klett-Sprachen Verlag (ISBN: 978-3-12-675298-5)

Gez. Andrew McDouall / SoSe 2021

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Module Title: DaF Technik und Ingenieurswesen (B2)

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
	90 SWS (67,5 hrs)	3		Each semester	1 semester

1	Module	Teaching Language	Contact hours	Self-study	Class size
	DaF (B2)	German	30 SWS (22,5 hrs)	60 SWS (45 hrs)	18

2 Learning outcomes

The reference level of this module is B2 according to the Common European Framework of Reference for languages (CEFR)

Knowledge

After successful completion of the module the students are able to:

- Understand and use written and spoken technical terminology
- Follow and initiate technical discussions and conversations
- Describe technical processes

Comprehension

After successful completion of the module the students are able to:

Understand listening and reading texts featuring technical development and work life

Application

After successful completion of the module the students are able to use technical language:

- Can analyze specialized texts and grasp central points
- Can participate competently in (specialist) discussions and give presentations on specialist topics.
- Can write commentaries, summaries on technical texts largely without errors.

3 Component content:

- text comprehension, analysis of tasks
- grammatical peculiarities as needed
- presentations of own projects
- discussions on selected topics
- text production (summarizing, explaining, naming, explaining, defining, quoting)

4 Teaching methods

- Taught classes based on communicative group activities integrating all four skills (reading, writing, speaking and listening)
- Monolingual, task-based, natural approach focusing on communication
- Blended learning: guided online modules to be completed as self-study

5 Prerequisites

a) Successful Attendance of a level 4 course (DaF B2) during the same semester

	OR b) Successful completion of a level 4 course (DaF B2) with passing grade OR c) Passing the placement test for level 4
6	**Methods of assessment** Essay (50%) and practical work, e.g. presentations, projects, written assignments, and online work (50%)
7	**Applicability of module**
8	**Person responsible for module/ lecturer** Ms Ilka Günnel
9	**Reading list (Core texts and recommended texts)** Deutsch für Ingenieure, Springer-Verlag (ISBN: 978-3-658-03633-1)

Gez. Andrew McDouall / SoSe 2021

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Module Title: DaF in Wirtschaft und Unternehmen (B2)

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
	90 SWS (67,5 hrs)	3		Each semester	1 semester

1	Module	Teaching Language	Contact hours	Self-study	Class size
	DaF (B2)	German	30 SWS (22,5 hrs)	60 SWS (45 hrs)	18

2 Learning outcomes

The reference level of this module is B2 according to the Common European Framework of Reference for languages (CEFR)

Knowledge

After successful completion of the module the students are able to:

- Has a sufficiently broad range of speech to speak in clear descriptions or reports on topics of business and economy and to express own points of view
- Follow and initiate related conversations in company communication

Comprehension

After successful completion of the module the students are able to:

Understand listening and reading texts, conversations and presentations featuring business and economy related topics

Application

After successful completion of the module the students are able to use every day language:

- Can understand the main ideas of complex texts on economic and company related topics, including discussions in this field of specialization.
- Can communicate so spontaneously and fluently that a normal conversation with native speakers is quite possible without major effort on either side.
- Can present work results in the group
- Can contribute own ideas and suggestions

3 Component content:

- Work forms
- Trade
- Stock exchange and shares
- Insurances
- Products and marketing
- Project work
- Participation in the company
- Fairs
- Logistics
- Job interviews

4 Teaching methods

	• Taught classes based on communicative group activities integrating all four skills (reading, writing, speaking and listening) • Monolingual, task-based, natural approach focusing on communication • Blended learning: guided online modules to be completed as self-study
5	**Prerequisites** a) Successful Attendance of a level 4 course (DaF B2) during the same semester OR b) Successful completion of a level 4 course (DaF B2) with passing grade OR c) Passing the placement test for level 4
6	**Methods of assessment** Presentation (50%) and practical work, e.g. projects, written assignments, and online work (50%)
7	**Applicability of module**
8	**Person responsible for module/ lecturer** Ms Stephanie Kahsay
9	**Reading list (Core texts and recommended texts)** DaF im Unternehmen (B2) Klett-Sprachen Verlag (ISBN: 978-3-12-676455-1)

Gez. Andrew McDouall / SoSe 2021

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Module Title: DaF Arbeitswelt und Gesellschaft (B2)

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
	180 SWS (135 hrs)	6		Each semester	1 semester

1	Module	Teaching Language	Contact hours	Self-study	Class size
	DaF (B2)	German	60 SWS (45 hrs)	120 SWS (90 hrs)	18

2 Learning outcomes

The reference level of this module is B2 according to the Common European Framework of Reference for languages (CEFR)

Knowledge

After successful completion of the module the students are able to:

- Has a sufficiently broad range of speech to speak in clear descriptions or reports on most topics of a general nature and to express own points of view; does not search conspicuously for words and uses some complex sentence structures.
- initiate a conversation, assume the speaker's role when appropriate, and end the conversation when he/she wishes, although this may not always be accomplished elegantly. Can contribute to the progress of the conversation in familiar territory by confirming understanding, prompting others to speak, etc.

Comprehension

After successful completion of the module the students are able to:

Understand listening and reading texts featuring advanced communication skills, living, digitalization, climate, apprenticeship and study, working environment, current trends in diet and sports

Application

After successful completion of the module the students are able to use every day language:

- Can understand the main ideas of complex texts on both concrete and abstract topics, including discussions in his/her field of specialization.
- Can communicate so spontaneously and fluently that a normal conversation with native speakers is quite possible without major effort on either side.
- Can express him/herself clearly and in detail on a wide range of subjects, explaining a point of view on a topical issue and giving the advantages and disadvantages of various options.
- Demonstrates a reasonably good command of grammar. Makes no mistakes that lead to misunderstanding and can self-correct most of his/her own errors.

3 Component content:

- Life in big cities
- Deceive and trick
- Digitization
- Meteorology
- Apprenticeship
- Nutrition
- Sports
- Teamwork
- Complaint

Version	Erstellt von	Freigabe (Datum/Kürzel)	Gültig ab
	Stephanie Kahsay	14.06.21 kah	WiSe21/22

4	**Teaching methods** • Taught classes based on communicative group activities integrating all four skills (reading, writing, speaking and listening) • Monolingual, task-based, natural approach focusing on communication • Blended learning: guided online modules to be completed as self-study
5	**Prerequisites** a) Successful completion of a level 3 course (DaF B1) with passing grade OR b) Passing the placement test for level 4
6	**Methods of assessment** Written examination (50%) and practical work, e.g. presentations, projects, written assignments, and online work (50%)
7	**Applicability of module**
8	**Person responsible for module/ lecturer** Ms Stephanie Kahsay
9	**Reading list (Core texts and recommended texts)** Kompass DaF (B2) Klett-Sprachen Verlag (ISBN: 9783126700009)

Gez. Andrew McDouall / SoSe 2021

AUSFÜLLHILFE: BEWEGEN SIE DEN MAUSZEIGER ÜBER DIE ÜBERSCHRIFTEN. AUSFÜHRLICHE HINWEISE: LEITFADEN MODULBESCHREIBUNG

Module Title: DaF Arbeitswelt und Gesellschaft (C1)

Module code	Workload	Credits/CP	Semester	Frequency of module	Duration
	180 SWS (135 hrs)	6		Each semester	1 semester

1	Module	Teaching Language	Contact hours	Self-study	Class size
	DaF (C1)	German	60 SWS (45 hrs)	120 SWS (90 hrs)	18

2 Learning outcomes

The reference level of this module is C1 according to the Common European Framework of Reference for languages (CEFR)

Knowledge

After successful completion of the module the students are able to:

- Can understand a wide range of demanding, longer texts and grasp implicit meaning.
- Has a wide range of means of speech from which he/she can select appropriate phrases to express him/herself clearly and appropriately on a wide range of general, academic, professional, or recreational topics without being restricted in what he/she wants to say.

Grammar and vocabulary at C1 level. Grammar taught is functional, i.e. related to functions and skills taught.

Comprehension

After successful completion of the module the students are able to:

Understand listening and reading texts featuring advanced communication skills, language proficiency, money public space, art, team work, study and work environment

Application

After successful completion of the module the students are able to use every day language:

- Can express him/herself fluently and spontaneously in a well-structured manner using likening devices, without having to search for clearly identifiable words.
- Can use language effectively and flexibly in social and professional life or in training and study.
- Can express him/herself clearly, in a structured and detailed way on complex subjects, making appropriate use of various means of linking texts.
- Maintains a high degree of grammatical correctness throughout; errors are rare, hardly noticeable, and usually self-corrected.

3 Component content:

- Multilingualism
- Money
- Higher education
- Working environment
- Conflict Resolution
- Teamwork
- Art
- (artificial) intelligenc

4	**Teaching methods** • Taught classes based on communicative group activities integrating all four skills (reading, writing, speaking and listening) • Monolingual, task-based, natural approach focusing on oral and written communication • Blended learning: guided online modules to be completed as self-study
5	**Prerequisites** a) Successful completion of a level 4 course (DaF B2) with passing grade OR b) Passing the placement test for level 5
6	**Methods of assessment** Written examination (50%) and practical work, e.g. presentations, projects, written assignments, and online work (50%)
7	**Applicability of module**
8	**Person responsible for module/ lecturer** Ms Stephanie Kahsay
9	**Reading list (Core texts and recommended texts)** Kompass DaF (C1) Klett-Sprachen Verlag (ISBN: n.n)

Gez. Andrew McDouall / SoSe 2021