



COBURG
UNIVERSITY
of applied sciences and arts



MODULE MANUAL

Digital Business Models and Technologies (Bachelor of Science)

Valid for Study and examination regulations (SPO) from, 24.03.2025
As of 22.06.2024

CONTENT

Content.....	2
Abbreviations	3
1. Programme Profile and intended Learning Outcomes	4
2. Module Structure.....	5
3. Risk Assessment.....	6
4. Module descriptions	7
1 ECONOMICS	7
2 BUSINESS ADMINISTRATION	9
3 QUANTITATIVE METHODS 1	11
5 BANKING 1	13
14 IT MANAGEMENT	16
15 INNOVATION MANAGEMENT	18
18 INTERCULTURAL MANAGEMENT	20
19 ARTIFICIAL INTELLIGENCE 1	22
21 INFORMATION SYSTEMS 1	24
22 INFORMATION SYSTEMS 2	26
29 GERMAN BASICS 1	29
30 GERMAN BASICS 2 (LEVEL B1)	31

ABBREVIATIONS

ECTS.....	European Credit Transfer System
HQR	Hochschulqualifikationsrahmen - Higher Education Qualifications Framework
SPO.....	Studienprüfungsordnung - Regulations for Study and Examinations
SWS.....	Semesterwochenstunden - contact hours per week per semester
mdIP.....	mündliche Prüfung – oral exam
schrP.....	schriftliche Prüfung – written exam
Pf.....	Portfolio Prüfung – portfolio examination

1. PROGRAMME PROFILE AND INTENDED LEARNING OUTCOMES

The Bachelor's program in Digital Business Models and Technologies (DBMT) is designed as a full-time program at a university of applied sciences and follows a sequential study model, in which one module is completed before the next begins.

In the first five semesters, students acquire in-depth knowledge in the areas of digital technologies, business & management, innovation & change, as well as key soft and cross-disciplinary skills. This structure enables a step-by-step understanding of complex interrelationships at the interface between business and IT and promotes their practical application. The aim is to translate the potential of new technologies – such as artificial intelligence, blockchain, cloud computing, and data analysis – into sustainable business models, products, and services.

The focus is on the integration of technological and business thinking. Students learn to evaluate technological developments and embed them in economic, organizational, and social contexts.

A key feature of the curriculum is its consistent practical orientation. Students apply theoretical concepts to real-life business situations in numerous projects. Collaborations with partners from industry, administration, and start-ups ensure the transfer of scientific methods into practice. Innovative ideas and prototypes are implemented in laboratories and digital learning environments.

In the sixth semester, the focus is on personal development and preparation for professional practice. Two elective courses allow students to set their own priorities, while the internship seminar serves to prepare them professionally and organizationally and to reflect on their own skills.

In the seventh semester, students complete a practical semester in an organization, where they apply and deepen their knowledge in real-world projects. The program concludes with a bachelor's thesis and colloquium, in which a practice-oriented scientific question is addressed and presented.

The program is aimed at German and international students. The first four semesters are taught in English and supplemented by German language classes, so that from the fifth semester onwards, German-language courses and the internship can be completed without any problems. This promotes linguistic and intercultural integration as well as the ability to work successfully in international and interdisciplinary teams.

The program enables students to independently apply scientific knowledge and methods in the context of digital and economic transformation. A solid foundation and practice-oriented specializations cover the breadth of activities in technology, business administration, and innovation management. Students learn to implement new technologies and economic developments in companies from an economic, social, and ethical perspective.

2. MODULE STRUCTURE

Coburg University – Bachelor Digital Business Models and Technologies

Starting at winter term 2025/26

Bachelor Digital Business Models and Technologies							Total ECTS	Total SWS	Number of exams
1 st term	Economics (3SWS, schrP)	IT-Management (3 SWS, schrP)	Information Sys- tems 1 (3 SWS, Pf)	Artificial Intelligence 1 (3 SWS, Pf)	Quantitative Meth- ods 1 (3 SWS, Pf)	German Basics 1 (6 SWS, schrP)	30	21	6
2 nd term	Business Admi- nistration (4 SWS, THE)	Innovation Manage- ment (4 SWS, Pf)	Intercultural Man- agement (4 SWS, Pf)	Information Systems 2 (4 SWS, Pf)	Banking 1 (4 SWS, THE)	German Basics 2 (6 SWS, schrP)	30	26	6
3 rd term	Digital Business 1 (3 SWS, schrP)	Process Manage- ment (3 SWS, Pf)	Finance 1 (3 SWS, schrP)	Project Applied Dig- ital Technology 1 (3 SWS, Pf)	Quantitative Meth- ods 2 (3 SWS, Pf)	Business German (4 SWS, schrP)	30	19	6
4 th term	Project Applied Digital Technology 2 (4 SWS, Pf)	Project Manage- ment (4 SWS, Pf)	Finance 2 (4 SWS, schrP)	Artificial Intelligence 2 (4 SWS, Pf)	Banking 2 (4 SWS, schrP)	Scientific Work (2 SWS, Pf)	30	22	6
5 th term	Data Science 1 (3 SWS, Pf)	Data Science 2 (3 SWS, Pf)	Digital Business 2 (3 SWS, Pf)	Current Trends in Digital Business 1 (3 SWS, Pf)	Current Trends in Digital Business 2 (3 SWS, Pf)	European History (4 SWS, Pf)	30	19	6
6 th term	Elective 1 (4 SWS)	Elective 2 (4 SWS)	Change Manage- ment (4 SWS, schrP)	Leadership 1 (4 SWS, schrP)	Leadership 2 (4 SWS, schrP)	Internship Place- ment Seminar (2x2 SWS, mdlP oder schrP)	29	24	6
7 th term	Internship 18 ECTS			Bachelor Thesis (BA) 11 ECTS		Colloquium (2 SWS) 2ECTS	31	2	
							210	133	37

3. RISK ASSESSMENT

Each module description contains a risk assessment in accordance with the Maternity Protection Act (§ 10ff MuschG). It states whether there are any potential risks to the unborn or the breastfed child of a student if she participates in the course. The assessment of the risk potentials is carried out by the module coordinator.

green	compliant, no restrictions
yellow	requires individual assessment
red	participation is not permitted during pregnancy and breastfeeding.

Chart 1: Risk assessment in accordance with the Maternity Protection Act

For further information and advice please contact the universities family office.

RISK ASSESSMENT OF MODULES			
Module No.	Module titel	Risk	Notes
1	Economics	green	none
2	Quantitative Methods 1	green	none
3	IT-Management	green	none
4	Artificial Intelligence 1	green	none
5	Information Systems 1	green	none
6	German Basics 1	Green	none
7	Business Administration	Green	none
8	Banking 1	Green	none
9	Innovation Management	Green	none
10	Intercultural Management	Green	none
11	Information Systems 2	Green	none
12	German Basics 2	Green	none

4. MODULE DESCRIPTIONS

The following module descriptions are valid for the Study and examination regulations (SPO) from. They will be updated before start of the term, if concept, content, or examination have been changed.

1 ECONOMICS Economics (Digital Business Models and Technologies, B.Sc., Economics)			
Module Coordinator	Prof. Dr. Lutz Schneider		
Lecturer	Prof. Dr. Lutz Schneider		
Short titel of module			
Language		Available in further Programmes	
english			
Module category	Term	Frequence of module offer	Duration of Module
Mandatory module	1st term	Winter term	1
WORKLOAD AND EXAMINIATION			
Participation requirements	none		
Risk assessment for pregnant women and mothers	green		
ECTS, Calculation of Grade	5 ECTS, Factor of calculation towards degree grade: Factor		
Workload	150 hours, comprising 34 contact hours (3 SWS) and 116 hours self study		
Course category		Examination: Method and Extent	
Lecture		Written exam	

CONTEND, METHODS, INTENDED LEARNING OUTCOMES

Content of module

This module provides a comprehensive overview of microeconomic and macroeconomic theories and concepts. It equips students with foundational knowledge about the functioning of markets, economic interrelations, and policy instruments essential for understanding complex economic systems.

Content Overview:

- Fundamentals of economic reasoning and economic modelling
- Microeconomics: supply and demand, theory of the firm and household behaviour
- Market functioning and efficiency, market failure, and externalities
- Macroeconomics and economic policy: national income, labour markets, monetary theory, and inflation
- International trade and global economic relations

Teaching and learning methods

Lectures / Exercises / Interactive Videos / Case Studies

Intended learning outcomes

Subject-Specific Competence:

- Students apply basic concepts of economic theory to analyse economic processes by using economic behaviour models to address micro- and macroeconomic questions.
- They examine economic policy strategies and assess their effects on different macroeconomic problem scenarios.

Methodological Competence:

- Students develop an awareness of the distinctions between scientific and non-scientific approaches.
- They explain the advantages and limitations of model-based explanatory frameworks and interpret mathematical methods for solving economic problems.

Communication and Cooperation Competence:

- Students articulate the key principles of economic modelling and describe the challenges involved in applying these models to real-world scenarios.
- They demonstrate the ability to clearly express and defend positions within social and academic group settings.

Personal Competence (Self-Competence):

- Students critically reflect on their everyday explanations of economic issues and transform them into scientifically grounded arguments based on economic models.
- They reflect on the limitations of economic thinking and engage with its implications for addressing ethical and sustainability-related challenges.

Reading list

- Mankiw, G. N. & Taylor, M. P. (2023). Economics (6th ed.). Cengage Learning EMEA.
- Krugman, P. R., Wells, R. & Herzog, R. (2024). Economics (7th ed.). Macmillan International, Higher Education.
- Hubbard, R. G. & O'Brien, A. P. (2024). Economics (9th ed.). Pearson Education.
- Case, K. E., Fair, R. C. & Oster, S. M. (2020). Principles of Economics (13th ed.). Pearson Education.

2 BUSINESS ADMINISTRATION

Business Administration

(Digital Business Models and Technologies, B.Sc., Business Administration)

Module Coordinator	Prof. Dr. Marianne Hock-Döpgen		
Lecturer	Frau Straube Lotta		
Short titel of module			
Language			Available in further Programmes
English			
Module category	Term	Frequence of module offer	Duration of Module
Mandatory module	2 nd term	Summer term	1

WORKLOAD AND EXAMINATION

Participation requirements	none
Risk assessment for pregnant women and mothers	green
ECTS, Calculation of Grade	5 ECTS, Factor of calculation towards degree grade: Factor
Workload	150 hours, comprising 45 contact hours (4 SWS) and 105 hours self study
Course category	Examination: Method and Extent
Mandatory module	Take Home Exam

CONTEND, METHODS, INTENDED LEARNING OUTCOMES

Content of module

This module introduces fundamental principles and practices of business administration. It explores the nature, structure, and functions of businesses, their ethical responsibilities, and the impact of digital transformation. Students will gain a comprehensive understanding of core business areas and strategic concepts.

Content overview:

- Foundations of business administration: definition and purpose of business, internal and external business environments, factors of production, types of businesses
- Business strategy: vision, mission, objectives
- Core functional areas of business: management, marketing, sales, finance, operations, human resources
- Business ethics and responsibilities: ethical decision-making, corporate social responsibility
- Digital business: e-commerce and omnichannel marketing, data-driven decision-making

Teaching and learning methods
• Lecture • Exercises • Independent reading
Intended learning outcomes
• Analyze and understand the role and responsibilities of businesses within society and the global economy • Apply ethical principles and corporate social responsibility in business environments • Critically evaluate business practices through evidence-based approaches and analytical reasoning • Explain core functional areas of business (including management, marketing, sales, finance, operations, and human resources) and how they are interrelated • Assess the impact of trends and specifically digital technologies on business management • Apply strategic and analytical tools such as SWOT analysis, PESTEL analysis, personas, and customer journey mapping to support business planning and decision-making
Reading list
• Shah, A., Talsma, B., McDaniel, C., Gitman, L. J., Koffel, L., Reece, M. (2022). Introduction to Business Administration. LOUIS: The Louisiana Library Network • Supplementary case study materials will be provided during lectures

3 QUANTITATIVE METHODS 1

Quantitative Methods 1

(Digital Business Models and Technologies, B.Sc., Quantitative Methods 1)

Module Coordinator	Prof. Dr. Thomas Schauerte		
Lecturer	Prof. Dr. Thomas Schauerte		
Short titel of module			
Language			Available in further Programmes
english			
Module category	Term	Frequence of module offer	Duration of Module
Mandatory module	1st term	Winter term	1

WORKLOAD AND EXAMINIATION

Participation requirements	none
Risk assessment for pregnant women and mothers	green
ECTS, Calculation of Grade	5 ECTS, Factor of calculation towards degree grade: Factor
Workload	150 hours, comprising 34 contact hours (3 SWS) and 116 hours self study
Course category	Examination: Method and Extent
Interactive seminar	Portfolio assessment

CONTEND, METHODS, INTENDED LEARNING OUTCOMES

Content of module
1. The Role of quantitative methods in the digital economy 2. Introduction to Python 3. Mathematical logic and its implementation in Python 4. Elementary algebra and Python as a calculator 5. Differential calculus and numerical differentiation 6. Analysis of roots, extrema, and inflection points using the Newton method 7. Power series expansions and Taylor's theorem 8. Integral calculus and numerical integration 9. Vectors, matrices, and vector spaces 10. Applications of matrix algebra

Teaching and learning methods
• Interactive lectures with live coding in Python • Group exercises using Jupyter Notebooks • Self-study with worksheets and online tutorials • Semester-long project work • Peer feedback and presentations • Use of learning platforms (e.g. Moodle)
Intended learning outcomes
Subject specific competencies: • Students understand fundamental mathematical concepts (logic, algebra, calculus, linear algebra) • They are able to apply these concepts to digital problems and questions • They master the implementation of mathematical methods using Python Methodological competencies: • Students can analyze problems and select appropriate mathematical methods • They are able to implement and interpret numerical procedures • They can carry out both analytical and numerical calculations using Python Other competencies (social and personal competencies): • Students work independently on tasks and projects • They reflect on their results and provide peer feedback • They develop an understanding of the role of quantitative methods in digital business models
Reading list
• Giorgi, G., Jiménez, B. & Novo, V. (2025). Lectures on Mathematics for Economic and Financial Analysis. Springer. • Jack, I. (2020). Mathematics for economics and business Mathematics for economics and business. Pearson. • McKinney, W. (2022). Python for Data Analysis (3rd ed.). O'Reilly Media, Inc. • Matthes, E. (2023). Python Crash Course: A Hands-On, Project-Based Introduction to Programming (3rd ed.). No Starch Press, New York.

5 BANKING 1

Banking 1

(Digital Business Models and Technologies, B.Sc., Banking 1)

Module Coordinator	Prof. Dr. Marianne Hock-Döpgen		
Lecturer	Herr Werner Frank		
Short titel of module			
Language		Available in further Programmes	
english			
Module category	Term	Frequency of module offer	Duration of Module
mandatory module	2nd term	summer term	1
WORKLOAD AND EXAMINATION			
Participation requirements	none		
Risk assessment for pregnant women and mothers	green		
ECTS, Calculation of Grade	5 ECTS, Factor of calculation towards degree grade: Factor		
Workload	150 hours, comprising 45 contact hours (4 SWS) and 105 hours self study		
Course category		Examination: Method and Extent	
Mandatory module		Take Home Exam	
CONTENT, METHODS, INTENDED LEARNING OUTCOMES			

Content of module

Students can describe the functioning of financial markets and the inter-dependencies between the different market segments and assess how developments within one sub-area affect other segments in a comparative global context. Analysis of selected global markets with reference to the following topics:

1. The European Union and its financial markets: history, structure, institutions.
2. The Euro and its role in world financial markets
3. Functions of financial markets and financial institutions: Economic environment, financial intermediaries, and innovations in the financial sector; role of rating agencies
4. Overview of financial markets; markets for corporate issues; money markets, debt markets, and equity markets; Markets for derivative instruments, equity derivatives, equity trading, quantitative products, strategic equity transactions
5. Financial market stability, regulation and supervision of financial markets
6. Credit rating agencies: overview of rating mechanisms and its institutions
7. Risk Management Overview in financial institutions
8. Digital Euro, banking and ethical behavior in the finance industry

Teaching and learning methods

Seminar-style instruction (SU) / Exercises (Ü) / Case studies / Assignments with solutions / Integration of e-learning components and case studies

Intended learning outcomes

Subject-specific competencies:

- Students weigh complex investment and financing decisions, taking into account various financial market theories and institutional economic approaches.
- They critically evaluate the interactions between global financial markets, financial instruments, and market participants in a comparative context.

Methodological competence:

- Students independently explore financial problems and structure them for the application of analytical methods.
- They test the implementation of various financial planning techniques and valuation models for financial instruments.

Communication and collaboration skills:

- Students explain financial issues and solutions in a way that is appropriate for the target audience.
- They report on the results of case study analyses in a team and discuss them constructively.

Self-competence:

- Students independently organize their learning process in the field of financial and capital markets and transfer what they have learned to new application contexts.
- They compare their own viewpoints on financial issues with those of others and develop new perspectives from this.

Reading list

- Marlene Haupt, Gianni Nicolini, Marianne Guille (2024) Financial Markets and Institutions, Bocconi University Press, ISBN-13 978-8831322812
- Jeff Madura (2021): Financial Markets and Institutions, 13th ed., Cengage Learning Inc.
- Dirk Schoenmaker, Sander Oosterloo, Jakob de Haan (2020) Financial Markets and Institutions: A European Perspective, 4th ed., Cambridge University Press, ISBN-13 978-1108713924
- Keith Pilbeam (2018) Finance and Financial Markets, 4th ed. Red Globe Press
- Marc Levinson (2018): Guide to Financial Markets, 7th ed., The Economist
- Stephen Valdez & Philip Molyneux (2015): An Introduction to Global Financial Markets, 8th ed., Palgrave MacMillan
- Frederic S. Mishkin, Stanley G. Eakins (2018): Financial Markets and Institutions, 9th ed., Pearson Series in Finance
- Frank J. Fabozzi, Frank J. Jones (2019): Foundations of Financial Markets and Institutions, 5th ed., MIT Press

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14 IT MANAGEMENT

IT Management

(Digital Business Models and Technologies, B.Sc., IT Management)

Module Coordinator	Prof. Dr. Eduard Gerhardt		
Lecturer	VHB		
Short titel of module			
Language		Available in further Programmes	
english			
Module category	Term	Frequence of module offer	Duration of Module
Mandatory module	1st term	Winter term	1
WORKLOAD AND EXAMINIATION			
Participation requirements	none		
Risk assessment for pregnant women and mothers	green		
ECTS, Calculation of Grade	5 ECTS, Factor of calculation towards degree grade: Factor		
Workload	150 hours, comprising 34 contact hours (3 SWS) and 116 hours self study		
Course category		Examination: Method and Extent	
Mandatory Module		Written Exam	
CONTEND, METHODS, INTENDED LEARNING OUTCOMES			
Content of module			
1. Fundamentals of IT Management 2. IT Strategy and Business-IT Alignment 3. IT Governance and IT Service Management 4. IT Project Management 5. IT Investments and Economic Efficiency 6. Digitalization and IT-Driven Innovation 7. Case Studies and Practical Examples			
Teaching and learning methods			
Lecture and Exercises			

Intended learning outcomes

Professional Competencies:

- Understand the role and significance of IT management within corporate leadership.
- Ability to align IT strategies with business objectives and manage IT resources effectively.
- IT application operations
- Legacy issues and application modernization
- Centralized vs. decentralized transaction processing
- Application Modification

Technical Competencies:

- Develop and evaluate IT strategies, IT service management processes, and IT governance frameworks.
- Apply methods to plan, control, and optimize IT processes and infrastructures.
- Deepen your existing expertise in computer science and information technology with regard to the requirements and relevant technologies of enterprise computing and digital transformation.
- Understand, evaluate and be able to apply the problems/challenges as well as the different aspects and approaches of modernizing legacy applications in an enterprise context.
- Understand, evaluate and be able to apply traditional and new approaches (Blockchain, DLT) for online transaction processing (OLTP) as well as the underlying processes and technologies.
- Understand and be able to apply possibilities, concepts and technologies for the implementation

Scientific Professionalism:

- Analyze and assess the strategic and operational value of IT within organizations.
- Design concepts for digital transformation, IT investment planning, and IT project management while considering business requirements.
- Critically reflect on the impact of IT decisions on organizational structures, processes, and value creation.

Reading list

- Kenneth Laudon / Jane Laudon: Management Information Systems, ISBN- 13:978-0-273-78997- 0, Pearson, current edition
- Radu Spataru: Practical Guide for IT Leaders: Your Compass for Navigating the World of IT Leadership

15 INNOVATION MANAGEMENT

Innovation Management

(Digital Business Models and Technologies, B.Sc., Innovation Management)

Module Coordinator	Prof. Dr. Marianne Hock-Döpgen		
Lecturer	Prof. Dr. Marianne Hock-Döpgen		
Short titel of module			
Language		Available in further Programmes	
english			
Module category	Term	Frequence of module offer	Duration of Module
Mandatory module	2nd term	Summer term	1
WORKLOAD AND EXAMINIATION			
Participation requirements	none		
Risk assessment for pregnant women and mothers	green		
ECTS, Calculation of Grade	5 ECTS, Factor of calculation towards degree grade: Factor		
Workload	150 hours, comprising 34 contact hours (3 SWS) and 116 hours self study		
Course category		Examination: Method and Extent	
Interactive seminar		Portfolio assessment	
CONTEND, METHODS, INTENDED LEARNING OUTCOMES			
Content of module			
The module provides an introduction to innovation management in companies. Different types of innovation as well as the theoretical foundations, tasks, and key elements of innovation management are examined. A particular emphasis is placed on the innovation management of business models. Content Overview: • Introduction and Fundamentals of Innovation Management • Different types and strategies of Innovation Management • New Sourcesof Innovation Management • Business Model Innovation			
Teaching and learning methods			
Lectures / Exercises / Independent Study / Case Studies/ Group Project & Presentation			

Intended learning outcomes

Subject specific competencies:

Students are able to:

- explain the fundamental concepts and theoretical foundations of innovation management,
- distinguish between different types of innovation, with particular emphasis on business model innovation, and
- analyze innovation management practices and innovation processes using established frameworks.

Methodological competencies:

Students are able to:

- apply the business model canvas framework for the analysis and development of innovative business models
- conduct structured case study analyses

Communication competencies:

Students are able to:

- present and discuss innovation-related topic
- analyse and present their study results in a structured manner
- work and communicate effectively in teams

Reading list

- Tidd, J., & Bessant, J. (2020). *Managing innovation: Integrating technological, market and organizational change* (7th ed.). Wiley.
- Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: A handbook for visionaries, game changers, and challengers*. Wiley.

18 INTERCULTURAL MANAGEMENT

Intercultural Management

(Digital Business Models and Technologies, B.Sc., Intercultural Management)

Module Coordinator	Prof. Dr. Jochen Leidner		
Lecturer	Prof. Dr. Jochen Leidner		
Short titel of module			
Language		Available in further Programmes	
english			
Module category	Term	Frequence of module offer	Duration of Module
Mandatory module	2nd term	Summer term	1
WORKLOAD AND EXAMINIATION			
Participation requirements	None		
Risk assessment for pregnant women and mothers			
ECTS, Calculation of Grade	5 ECTS, Factor of calculation towards degree grade: Factor		
Workload	150 hours, comprising 45 contact hours (4 SWS) and 105 hours self study		
Course category		Examination: Method and Extent	
Mandatory module		Portfolio assessment	
CONTEND, METHODS, INTENDED LEARNING OUTCOMES			
Content of module			
The module teaches key concepts of intercultural communication and their application in international work contexts. It combines theoretical models with practical examples from different cultures. • Communication models (including Shannon, Bühler) and cultural foundations • Culture, values, lifestyles, and stereotypes • Rituals, hospitality, food, work, and leisure in a cultural comparison • Country-specific examples (e.g., Germany, Japan, Great Britain, Spain, Switzerland) • Scientific cultural models (Hofstede, GLOBE) and communication styles • Teamwork, leadership, hierarchies, and project management in an intercultural context • Virtual communication, taboos, pitfalls, and cultural translation exercises			

Teaching and learning methods
Lectures by instructors, student presentations, reading and discussion of scientific and general primary and secondary literature, individual and group exercises
Intended learning outcomes
Professional competence - Analyze situations from multiple perspectives and evaluate their impact on people from different cultural backgrounds. - Compare linguistic and cultural differences and derive strategies for action. Methodological competence - Use simple reflection methods to analyze one's own cultural background. - Apply basic perspective-changing techniques. Communication and cooperation skills - Exchange cultural experiences in a structured manner in groups. - Work cooperatively on intercultural case studies. Personal skills - Reflect critically on one's own norms and values. - Develop openness to cultural diversity.
Reading list
- Haller, Peter M. und Ulrich Nägele (2013) Praxishandbuch Interkulturelles Management. Berlin, Heidelberg: Springer Gabler. - Heringer, Hans Jürgen (2017) Interkulturelle Kommunikation Paperback (3. Aufl.). Tübingen: Franck/UTB. - Lang, Reinhard und Nicole Baldauf (2016) Interkulturelles Management. Berlin, Heidelberg: Springer Gabler. - Lewis, Richard D. (2005) When Cultures Collide: Leading Across Cultures (3. Aufl.). Nicholas Brealey Publishing.

19 ARTIFICIAL INTELLIGENCE 1

Artificial Intelligence 1

(Digital Business Models and Technologies, B.Sc., Artificial Intelligence 1)

Module Coordinator	Prof. Dr. Jochen Leidner		
Lecturer	Prof. Dr. Jochen Leidner		
Short titel of module			
Language		Available in further Programmes	
English			
Module category	Term	Frequence of module offer	Duration of Module
Mandatory module	1st term	winterterm	1
WORKLOAD AND EXAMINIATION			
Participation requirements	none		
Risk assessment for pregnant women and mothers	green		
ECTS, Calculation of Grade	5 ECTS, Factor of calculation towards degree grade: Factor		
Workload	150 hours, comprising 34 contact hours (3 SWS) and 116 hours self study		
Course category		Examination: Method and Extent	
Mandatory Module		Portfolio Assessment	

CONTEND, METHODS, INTENDED LEARNING OUTCOMES

Content of module

- Introduction – Course Content Overview – Admin Preliminaries - Motivation Terminology – "Artificial Intelligence"? - Motivation: Modelling Intelligence or Automating Advanced (Human) Tasks - History of AI - Philosophical Implications of AI
- Applications - The 5 "V"s of Big Data, What is machine learning?" – classification – regression – linear separability – features and feature vectors – pre-processing: normalisation, imputation evaluation: : P, R, F1, confusion matrix.
- Supervised learning from data (naive Bayes classification, linear regression, logistic regression, decision trees, neural networks and "deep learning"
- evaluation: quantitative, qualitative, confusion matrix, metrics (F1, P, R), cross-validation, learning curves
- Data annotation and inter-rater agreement
- Unsupervised machine learning from data (hierarchical clustering, "flat" k-means clustering, evaluation of clustering methods)
- Scientific literature research, how to read a scientific paper; how to document an experiment
- Rule based systems, sequence learning, information extraction from textual documents.
- Software tools: Orange, WEKA, Spark & co.
- Project Management for AI/Machine Learning/Data-Science & the Data-to-Value Process Methodology
- A short introduction to programming – the Python programming language
- AI and ethics: moral and social implications of automation, machine learning and AI
- The Deep Learning revolution; ChatGPT, Applications.

Teaching and learning methods

1. Lecture by the instructor
2. On-site exercises and homework
3. Independent reading, research, and programming practice for further study

Intended learning outcomes

Technical skills:

- Knowledge of basic concepts of machine learning (linear supervised models for classification, unsupervised clustering)
- Methodology for developing AI projects
- Basic knowledge of programming and the Python programming language
- Understanding of how models are evaluated quantitatively
- Practicing the reception and articulation of scientific content in English

Reading list

- Hastie, Trevor, Robert Tibshirani and Jerome Friedman (2009) Elements of Statistical Learning (2nd ed.), New York, NY, USA: Springer. [free download]
- Stuart Russell und Peter Norvig (2020) Artificial Intelligence: A Modern Approach, 4th edition (Pearson Series in Artificial Intelligence) Hardcover – 28 April 2020 [1136 S., dt. Übers. Stuart Russell und Peter Norvig (2023) Künstliche Intelligenz: Ein moderner Ansatz, Pearson, 1248 Seiten, ISBN 978-3868944303].
- Beazley, David M. (2006) Python: Essential Reference, Indianapolis, IN, USA: SAMS. Lutz, Mark (2013) Learning Python: Powerful Object-Oriented Programming, Sebastopol, CA, USA: O'Reilly.

21 INFORMATION SYSTEMS 1

Information Systems 1

(Digital Business Models and Technologies, B.Sc., Information Systems 1)

Module Coordinator	Prof. Dr. Eduard Gerhardt		
Lecturer	Prof. Dr. Eduard Gerhardt		
Short titel of module			
Language		Available in further Programmes	
english			
Module category	Term	Frequence of module offer	Duration of Module
Mandatory module	1st term	winterterm	1
WORKLOAD AND EXAMINIATION			
Participation requirements	none		
Risk assessment for pregnant women and mothers	green		
ECTS, Calculation of Grade	5 ECTS, Factor of calculation towards degree grade: Factor		
Workload	150 hours, comprising 34 contact hours (3 SWS) and 116 hours self study		
Course category		Examination: Method and Extent	
Mandatory Module		Portfolio Assessment	
CONTEND, METHODS, INTENDED LEARNING OUTCOMES			
Content of module			
The lecture covers the following contents:			
1.	Data, Information, Knowledge		
2.	Management of Master und Movement Data		
3.	Management of Organizational and Configuration Data		
4.	Software and Hardware		
5.	Types of information systems		
6.	Requirement Analysis and System Adaptation		
7.	Reporting and Analysis		
8.	Basics of the operation of OLPT, OLAP-Systems		
9.	IT-supported Business Processes		

Teaching and learning methods
Lecture, hand on session on ERP-system e.g. SAP S4H
Intended learning outcomes
Professional competencies: - The participants gain knowledge about the dependency between information systems in organizations from the view of the users. They understand the structure, function, and integration aspects of information systems solve operational tasks with the help of an IT-system and evaluate their impact Technical competencies: - Imparting the ability to develop requirements for information systems and to operate an IT-system e.g., ERP-System Scientific professionalism: - The participants gain knowledge about the interface between the information systems and the corporate management. They can - develop approaches to implementing IT-Systems, considering the business needs - analyze, evaluate, and implement basic concepts, requirements from finance and controlling related to an ERP system actively shape the lifecycle of the ERP system in terms of business IT alignment - Personality development and empowerment for societal engagement. Commitment: Students acquire the willingness to learn and self-confidence to independently meet general business requirements with IT-Solutions
Reading list
- Kenneth Laudon / Jane Laudon: Management Information Systems, ISBN- 13:978-0-273-78997- 0, Pearson, current edition - Riches, Matthew: SAP: An Introduction: Next-Generation Business Processes and Solutions, SAP PRESS, current edition https://help.sap.com

22 INFORMATION SYSTEMS 2

Information Systems 2

(Digital Business Models and Technologies, B.Sc., Business Processes in ERP-Systems)

Module Coordinator	Prof. Dr. Eduard Gerhardt		
Lecturer	Prof. Dr. Eduard Gerhardt		
Short titel of module			
Language		Available in further Programmes	
english			
Module category	Term	Frequence of module offer	Duration of Module
Mandatory module	2 nd term	Summer term	1
WORKLOAD AND EXAMINIATION			
Participation requirements	none		
Risk assessment for pregnant women and mothers	green		
ECTS, Calculation of Grade	5 ECTS, Factor of calculation towards degree grade: Factor		
Workload	150 hours, comprising 45 contact hours (4 SWS) and 105 hours self study		
Course category		Examination: Method and Extent	
Mandatory module		Portfolio	
CONTEND, METHODS, INTENDED LEARNING OUTCOMES			

Content of module

The module imparts the basic knowledge about SAP and the module FI

1. Accounts Payable and Receivables Management
 - 1.1. Master Data Management
 - 1.2. Management of Incoming, Outgoing Invoices
2. Material Management
 - 2.1. Master Data Management
 - 2.2. Business Processes in Procurement
3. Sales and Distribution
 - 3.1. Master Data Management
 - 3.2. Business Processes in Sales and Distribution
4. Payment Management
 - 4.1. Master Data Management
 - 4.2. Types of Payments Processes
5. Production Planning and Execution
 - 5.1. Master Data Management
 - 5.2. Business Processes Production
6. Warehouse Management
 - 6.1. Master Data Management
 - 6.2. Goods Delivery Process
7. Human Capital Management
 - 7.1. Master Data Management
 - 7.2. Employee hiring Processes
 - 7.3. Payroll Processes

Teaching and learning methods

Exercises, hand on session on ERP-system e.g. SAP S4H and group workshop

Intended learning outcomes

Professional Competencies

- Students understand end-to-end business processes across FI, MM, SD, PP, WM, and HCM.
- They recognize integration requirements between organisational units and between FI and CO.
- They can explain how master data and transactions in each area (e.g., procurement, sales, production, payroll) affect financial accounting and controlling.

Technical Competencies

- Students can independently execute business processes in SAP S/4HANA
- They can maintain relevant master data (vendors, customers, materials, BOMs, employees, etc.) and interpret resulting FI/CO postings.

Scientific Professionalism

- Students understand the functioning and logic of ERP systems, using SAP S/4HANA as a reference.
- They can deepen their knowledge via self-study, exercises, and case analyses, and critically interpret system behavior.

Personal Development & Empowerment

- Students build confidence in handling complex business scenarios.
- They develop problem-solving skills, autonomy, and the readiness to use IT solutions to meet business requirements.
- They strengthen teamwork skills through group workshops.

Reading list

- Tritschler, Jonas: Financial Accounting with SAP S/4HANA: Business User Guide, SAP PRESS, current edition
- Akhtar, Jawad: Materials Management with SAP S/4HANA: Business Processes and Configuration, SAP PRESS, current edition
- Van Helfteren, Christian: Configuring Sales in SAP S/4HANA: Business Processes and Configuration, SAP PRESS, current edition

Internet Ressources

- <https://help.sap.com/>
- Global Bike Documentation and Case Studies

29 GERMAN BASICS 1

German Basics 1 (Level A2)

(Digital Business Models and Technologies, B.Sc., German Basics 1 (Level A2))

Module Coordinator	Dr. Edgar Skvorcov		
Lecturer	Marion Haase		
Short title of module	German as foreign language A2		
Language		Available in further Programmes	
German			
Module category	Term	Frequency of module offer	Duration of Module
Mandatory Module	1st term	Winter term	1
WORKLOAD AND EXAMINIATION			
Participation requirements	None		
Risk assessment for pregnant woman and mothers	green		
ECTS, Calculation of Grade	5 ECTS, Factor of calculation towards degree grade: Factor		
Workload	150 hours, comprising 67,5 contact hours (6SWS) and 82,5 hours self study		
Course category		Examination: Method and Extent	
Hybrid		Written exam	
CONTEND, METHODS, INTENDED LEARNING OUTCOMES			
Content of module			
Everyday study and work situations, finding your way around the university, making contacts, writing emails, following lectures. Skills: understanding and writing simple texts, introducing yourself on the phone and in person, making appointments, asking for travel and campus information. Grammar: present tense, perfect tense, modal verbs, relative clauses with wem/was (A2 comprehension), simple sentence structures, negations, questions. Vocabulary: university, university facilities, degree programs, in-person and online courses, forms, application and study documents, professional fields.			
Teaching and learning methods			
Grammar and vocabulary exercises, dialogues, role-plays, short reading and listening texts, as well as video clips, poster and map exercises.			

Intended learning outcomes
Write short texts independently, fill out forms, and hold simple conversations in your studies/work.
Reading list
• Kurs DaF A2, Deutsch für Studium und Beruf, Klett, ISBN: 978-3-12-676840-5

30 GERMAN BASICS 2 (LEVEL B1)

German Basics 2

(Digital Business Models and Technologies, B.Sc., German Basics 2 (Level B1))

Module Coordinator	Dr. Edgar Skvorcov
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Lecturer	Dr. Edgar Skvorcov
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Short titel of module	
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Language	Available in further Programmes
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German	
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Module category	Term	Frequency of module offer	Duration of Module
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Mandatory Module	2nd term	Winter / Summer term	1
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WORKLOAD AND EXAMINATION

Participation requirements	none
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Risk assessment for pregnant women and mothers	green
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ECTS, Calculation of Grade	5 ECTS, Factor of calculation towards degree grade: Factor
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Workload	150 hours, comprising 67,5 contact hours (6 SWS) and 82,5 hours self study
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Course category	Examination: Method and Extent
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Mandatory module	Written exam
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CONTEND, METHODS, INTENDED LEARNING OUTCOMES

Content of module

Students acquire linguistic and cultural competences (reading, listening, writing and speaking skills) for everyday life and study in German. German is usually the second, third or additional language English. It is of central importance for multilingual learners to recognise the language as a system (language comparison). In this way, they develop a deeper understanding of linguistic structures (grammar, lexis) and the cultural context, which improves their ability to communicate independently in everyday life. Students can furthermore use language assistants, apps, online resources and similar tools to manage and expand their language learning.

Teaching and learning methods
Learning material: Kurs DaF B1. Deutsch für Studium und Beruf, Kurs- und Übungs-buch. 2025. KLETT: ISBN 978-3-12-676842-9. Kurs DaF B1. Deutsch für Studium und Beruf Kurs- und Übungs-buch. 2024. Hybride Ausgabe all-ango, KLETT. Subject-specific learning materials will be provided in the course.
Intended learning outcomes
Language Proficiency B1 Spoken interaction ✓ Can give straightforward descriptions or reports on a range of familiar topics in own field of interest ✓ Can give short reasons or explanations for views, plans or actions. ✓ Can give a prepared, straightforward presentation on a familiar topic in own field in such a way that it can usually be followed with ease, explaining the main points with sufficient precision. Listening Comprehension ✓ Can understand many texts on everyday-life topics thanks to a sufficiently large vocabulary. ✓ Can understand simple, clearly structured lectures and presentations on familiar topics or topics within their own field of study or interest, provided that standard language is spoken clearly. ✓ Can understand both the main idea and specific details in spoken texts, as long as they are articulated clearly and with a familiar accent. Reading Comprehension ✓ Can understand short texts on topics of personal interest (e.g. course announcements or stories on sport, music, travel) written in simple words and supported by illustrations and pictures. ✓ Can understand short and simple messages (e.g. posts on social media or emails) suggesting when and where to meet. Can read uncomplicated non-fiction texts on topics related to own interests and areas of expertise with pacifying understanding. Written production ✓ Can produce straightforward, coherent text on a range of familiar topics within his/her field of interest, linking individual shorter passages in a linear sequence. ✓ Can write a very short, elementary description of events, past actions and personal experiences ✓ Can summarise, report and comment with some confidence on a wide range of factual information in his/her field, both on familiar routine matters and on less routine matters.
Reading list
• Council of Europe: Global scale - Table 1 (CEFR 3.3): Common Reference levels (coe.int) Council of Europe: Official translations of the CEFR Global Scale (coe.int) [03.04.25] • Gemeinsamer Europäischer Referenzrahmen für Sprachen: lernen, lehren, beurteilen. Begleitband. 2020. Stuttgart: Klett, ISBN 978-3-12-676999-0. [03.04.25] • Glaboniat, M.; Müller, M.; Rusch, P.; Schmitz, Helen; Werten-schlag, L.. 2013. Profile deutsch A1-C2. 1. Aufl.. Lernzielbestimmungen, Kannbeschreibungen, Kommunikative Mittel. Stuttgart: Klett, ISBN 978-3-12-606518-4.



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