

# MODULE GUIDE

for the study program

## **BUSINESS INFORMATICS & AI (B.SC.)**

6 SEMESTERS (FULL-TIME), 8 SEMESTERS (PART-TIME)

NOTE: THIS IS AN ENGLISH TRANSLATION. ONLY THE DOCUMENT IN THE GERMAN ORIGINAL HAS LEGALLY BINDING VALIDITY.

## **INU - INNOVATIVE UNIVERSITY OF APPLIED SCIENCES**

Department of Management, Technology & Psychology

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## 1 Structural organization of the study program

The curriculum of the Business Informatics & AI (B.Sc.) program, which has a modular structure, is composed of subject-specific modules in economics and information technology, interdisciplinary modules and subject-specific modules. Since subject-specific modules are also anchored as fundamental in other study programs and the acquisition of interdisciplinary competencies is elementary for all study programs, a canon of "compound modules" can be defined from these modules, which are part of the compulsory curriculum in several study programs. Moreover, these so-called "compound study programs" are structurally identical, see Table 1 and 2.

| Full-time study structure Business Informatics & AI (B.Sc.) |                   |                   |                          |                          |                   |
|-------------------------------------------------------------|-------------------|-------------------|--------------------------|--------------------------|-------------------|
| 1st sem.                                                    | 2nd sem.          | 3rd sem.          | 4th sem.                 | 5th sem.                 | 6th sem.          |
| Mandatory modules                                           | Mandatory modules | Mandatory modules | Mandatory modules        | Mandatory modules        | Mandatory modules |
|                                                             |                   |                   | Elective concentration 1 | Elective concentration 2 | Bachelor thesis   |

Table 1: Structural design of a 6-semester full-time study program.

| Part-time study structure Business Informatics & AI (B.Sc.) |                   |                   |                   |                        |                        |                        |                   |
|-------------------------------------------------------------|-------------------|-------------------|-------------------|------------------------|------------------------|------------------------|-------------------|
| 1st sem.                                                    | 2nd sem.          | 3rd sem.          | 4th sem.          | 5th sem.               | 6th sem.               | 7th sem.               | 8th sem.          |
| Mandatory modules                                           | Mandatory modules | Mandatory modules | Mandatory modules | Mandatory modules      | Mandatory modules      | Mandatory modules      | Mandatory modules |
|                                                             |                   |                   |                   | Elective concentration | Elective concentration | Elective concentration | Bachelor thesis   |

Table 2: Structural design of an 8-semester part-time study program.

The study programs consist of different types of modules, which are arranged in module groups according to the content composition of the respective study program. There are

- Composite modules that are represented as required modules in all or several study programs, see Table 3,
- Subject-specific modules that are taught as compulsory modules exclusively in this study program, see Table 4,
- Elective concentrations totaling 30 ECTS credits (two concentrations with 15 ECTS credits each, each containing two or three elective modules) in the fourth and fifth semesters in the full-time study model (6 semesters) or in the fifth to seventh semesters in the part-time study model,
- an extra-curricular, optional module that precedes all study programs prior to their start.

Both elective concentrations are, in a broader context, "composite modules" in that they may be chosen by students in affiliated programs.

### 1.1 Composite modules

The "Composite Modules" are taught as interdisciplinary modules for the teaching of business administration as well as methodological and interdisciplinary basics with the same content in all or several study programs. The basis for this is the International Business Administration (B.A.) program, which has the largest proportion of business modules. Which modules of this canon are taught in detail in each study program is determined by their fit to the specific qualification profile of the study program. Table 3 shows which subject is taught with the same content in which study program.

With the compound modules, it is achieved that all students acquire a basic understanding of business terminology and economic contexts required for the rest of their studies. The compound modules thus cover subject areas that do not belong to the specialist focus of the individual study programs, but nevertheless impart relevant knowledge and competencies as a basis for the specialist specialization in the respective study programs. They also serve to impart methodological and interdisciplinary core competencies.

## 1. Structural organization of the study program

### 1.2 Specific modules of the Business Informatics & AI (B.Sc.) program

| Module no.                                                                                                                                                                                        | Module name                                      | ECTS points | SWS | Compound <sup>*)</sup> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------|-----|------------------------|
| 1.0002.0.01                                                                                                                                                                                       | Fundamentals of Business Administration          | 5           | 4   | BIAI;IBA;BP;SMM        |
| 1.0003.0.01                                                                                                                                                                                       | External and Internal Accounting                 | 5           | 4   | BIAI;IBA;BP            |
| 1.0006.0.01                                                                                                                                                                                       | Business Mathematics                             | 5           | 4   | BIAI;IBA               |
| 1.0007.0.01                                                                                                                                                                                       | Statistics                                       | 5           | 5   | BIAI;IBA;BP;PSY        |
| 1.0010.0.01                                                                                                                                                                                       | Civil and Labor Law                              | 5           | 4   | BIAI;IBA;BP            |
| 1.0011.0.01                                                                                                                                                                                       | Commercial and Corporate Law                     | 5           | 4   | BIAI;IBA               |
| 1.0012.0.01                                                                                                                                                                                       | Business English and Intercultural Communication | 5           | 4   | BIAI;IBA;BP;SMM;PSY    |
| 1.0014.0.01                                                                                                                                                                                       | Agile Project Management                         | 5           | 2   | BIAI;IBA;SMM           |
| 1.0015.0.01                                                                                                                                                                                       | Business Simulation                              | 5           | 3   | BIAI;IBA;SMM           |
| 1.0022.0.01                                                                                                                                                                                       | International Strategic Management               | 5           | 2   | BIAI;IBA               |
| 1.0027.0.01                                                                                                                                                                                       | Innovationsmanagement and Entrepreneurship       | 5           | 3   | BIAI;IBA;SMM           |
| *) IBA = International Business Administration (B.A.), BP = Business Psychology (B.Sc.), PSY = Psychology (B.Sc.), SMM = Social Media Management (B.A.), BIAI = Business Informatics & AI (B.Sc.) |                                                  |             |     |                        |

Table 3: Overview of the compound modules.

### 1.2 Specific modules of the Business Informatics & AI (B.Sc.) program

The composite modules are supplemented with study program specific modules that expand the economic, linguistic-cultural, methodological and interdisciplinary fundamentals and competencies with subject-specific fundamentals in business informatics and AI as well as in-depth subject knowledge in those fields. For the Business Informatics & AI (B.Sc.) program, these are the modules according to Table 4.

| Module No.  | Module name                                  | ECTS points | SWS |
|-------------|----------------------------------------------|-------------|-----|
| 1.0105.0.01 | Fundamentals of Business Informatics         | 5           | 4   |
| 1.0106.0.01 | Programming I                                | 5           | 4   |
| 1.0107.0.01 | Software Engineering                         | 5           | 4   |
| 1.0108.0.01 | Programming II                               | 5           | 4   |
| 1.0109.0.01 | IT Projekt Management                        | 8           | 5   |
| 1.0110.0.01 | Scientific Work and AI                       | 5           | 4   |
| 1.0111.0.01 | Advanced Mathematics                         | 5           | 4   |
| 1.0112.0.01 | Introduction to Artificial Intelligence      | 5           | 4   |
| 1.0113.0.01 | Data Bases and Information Systems           | 5           | 4   |
| 1.0114.0.01 | Machine Learning                             | 5           | 4   |
| 1.0115.0.01 | Big Data and Cloud Computing                 | 5           | 4   |
| 1.0116.0.01 | Law for AI and Informatics                   | 5           | 4   |
| 1.0117.0.01 | Ethics in AI and Society                     | 5           | 4   |
| 1.0118.0.01 | Introduction to ERP- und CRM-Systeme         | 5           | 4   |
| 1.0119.0.01 | Digital Marketing with AI                    | 5           | 4   |
| 1.0120.0.01 | Change Management and Digital Transformation | 5           | 4   |
| 1.0121.0.01 | Bachelor's Thesis                            | 12          | 0   |

Table 4: Overview of the specific modules of the study program.

### 1.3 Elective concentration

With a high degree of standardization of content, the curriculum can be individualized according to students' ideas and interests by adding concentration modules to the composite modules and course-specific modules.

In the fourth and fifth semesters in the full-time study model or in the fifth to seventh semesters in the part-time study model, students have the opportunity to align their studies according to their interests and preferences by choosing two concentrations (compulsory elective concentrations - CEC). In doing so, students are required to choose one elective concentration from their program of study. The second concentration can either be chosen again from their own study program or from another study program in accordance with the permissible concentration selection options. An overview of the concentrations and associated modules of this study program is shown in Table 5.

| Module no.         | Module name                            | ECTS points | SWS |
|--------------------|----------------------------------------|-------------|-----|
| <b>1.S012.S.01</b> | <b>IT Security Management</b>          |             |     |
| 1.0122.0.01        | Cyber Security                         | 5           | 4   |
| 1.0123.0.01        | Security Management and Compliance     | 5           | 4   |
| 1.0124.0.01        | Network Security                       | 5           | 2   |
| <b>1.S013.S.01</b> | <b>AI and Robotics</b>                 |             |     |
| 1.0125.0.01        | Robotics und Autonomous Systems        | 5           | 4   |
| 1.0126.0.01        | Natural Language Processing (NLP)      | 5           | 4   |
| 1.0127.0.01        | Human-Robot-Interaction                | 5           | 2   |
| <b>1.S014.S.01</b> | <b>Digital Transformation</b>          |             |     |
| 1.0128.0.01        | Digital Strategies and Business Models | 5           | 4   |
| 1.0129.0.01        | IT Strategy and Governance             | 5           | 4   |
| 1.0130.0.01        | New Work                               | 5           | 2   |

Table 5: Overview of the concentration elective areas with the specific modules contained therein.

## 1.4 Cross-selection-options

The collaborative nature of the study programs allows students to select the 2nd elective concentration from an outside study program as well. The concentration selection options permitted for this purpose are shown in Table 6.

| Module no.                                                                                                                                                                                | Elective concentration (CEC)                    | Study program <sup>*)</sup> | Elective option in the study program <sup>*)</sup> |              |              |              |              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------|----------------------------------------------------|--------------|--------------|--------------|--------------|
|                                                                                                                                                                                           |                                                 |                             | IBA                                                | BP           | PSY          | SMM          | BIAI         |
| 1.S001.S.01                                                                                                                                                                               | International Marketing Management              | IBA                         | 1. or 2.                                           | only 2.      | not possible | only 2.      | only 2.      |
| 1.S002.S.01                                                                                                                                                                               | International Management                        | IBA                         | 1. or 2.                                           | only 2.      | not possible | only 2.      | only 2.      |
| 1.S003.S.01                                                                                                                                                                               | Sustainable Management                          | IBA                         | 1. or 2.                                           | only 2.      | not possible | only 2.      | only 2.      |
| 1.S.004.S.01                                                                                                                                                                              | Personnel psychology                            | BP                          | only 2.                                            | 1. or 2.     | only 2.      | only 2.      | not possible |
| 1.S005.S.01                                                                                                                                                                               | Psychology of Change and Digital Transformation | BP                          | only 2.                                            | 1. or 2.     | only 2.      | only 2.      | not possible |
| 1.S006.S.01                                                                                                                                                                               | Market, Advertising and Media Psychology        | PSY/BP                      | only 2.                                            | 1. or 2.     | 1. or 2.     | only 2.      | not possible |
| 1.S007.S.01                                                                                                                                                                               | Clinical Psychology                             | PSY                         | not possible                                       | only 2.      | 1. or 2.     | not possible | not possible |
| 1.S008.S.01                                                                                                                                                                               | Health psychology                               | PSY                         | not possible                                       | only 2.      | 1. or 2.     | not possible | not possible |
| 1.S009.S.01                                                                                                                                                                               | Fitness, Health & Food                          | SMM                         | only 2.                                            | only 2       | not possible | 1. or 2.     | not possible |
| 1.S010.S.01                                                                                                                                                                               | Fashion, Living & Trends                        | SMM                         | only 2.                                            | only 2       | not possible | 1. or 2.     | not possible |
| 1.S011.S.01                                                                                                                                                                               | Travel, Tourism & Events                        | SMM                         | only 2.                                            | only 2       | not possible | 1. or 2.     | not possible |
| 1.S012.S.01                                                                                                                                                                               | IT Security Management                          | BIAI                        | not possible                                       | not possible | not possible | not possible | 1. or 2.     |
| 1.S013.S.01                                                                                                                                                                               | AI and Robotics                                 | BIAI                        | not possible                                       | not possible | not possible | not possible | 1. or 2.     |
| 1.S014.S.01                                                                                                                                                                               | Digital Transformation                          | BIAI                        | not possible                                       | not possible | not possible | not possible | 1. or 2.     |
| *) IBW = International Business Administration (B.A.), BP = Business Psychology (B.Sc.), PSY = Psychology (B.Sc.), SMM = Social Media Management (B.A.), BIAI = Business Informatics & AI |                                                 |                             |                                                    |              |              |              |              |

Table 6: Overview of the concentration selection options in the compound study programs.

The examination formats specified in the module descriptions constitute the standard assessment formats. In order to ensure an assessment that is fully aligned with the intended learning outcomes and competence orientation, the specific form of assessment may be modified on a semester-by-semester basis. The applicable examination format will be formally announced at the commencement of the respective course.

## 1.5 Study plan of the 6-semester full-time model

| Business Informatics & AI (B.Sc.) - Full time              |                                                  |             |    |    |    |    |     |    |    |    |    |                     |    |                                 |  INNOVATIVE<br>UNIVERSITY<br>OF APPLIED SCIENCES |                                             |            |                                        |
|------------------------------------------------------------|--------------------------------------------------|-------------|----|----|----|----|-----|----|----|----|----|---------------------|----|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|------------|----------------------------------------|
| Modul Nr.                                                  | Module name                                      | ECTS Points |    |    |    |    | SWS |    |    |    |    | Workload (in hours) |    |                                 | Type <sup>1</sup>                                                                                                                   | Prerequisite for the award of credits       |            |                                        |
|                                                            |                                                  | 1           | 2  | 3  | 4  | 5  | 6   | 1  | 2  | 3  | 4  | 5                   | 6  | Synchronous contact time online |                                                                                                                                     | Asynchronous contact time guided self-study | Self-study | Forms of examination                   |
| Subject Area: Introduction to Self-organized Learning **)  |                                                  |             |    |    |    |    |     |    |    |    |    |                     |    |                                 |                                                                                                                                     |                                             |            |                                        |
| 1.0001.0.01                                                | Introduction to Self-organized Learning          |             |    |    |    |    |     | 1  |    |    |    |                     |    |                                 |                                                                                                                                     |                                             | E          | -                                      |
| 1.4101.0.01                                                | Preliminary Mathematic Course (only in German)   |             |    |    |    |    |     | 1  |    |    |    |                     |    |                                 |                                                                                                                                     |                                             | E          |                                        |
| Subject Area: Economic Fundamentals                        |                                                  |             |    |    |    |    |     |    |    |    |    |                     |    |                                 |                                                                                                                                     |                                             |            |                                        |
| 1.0002.0.01                                                | Fundamentals of Business Administration          | 5           |    |    |    |    |     | 4  |    |    |    |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Written Exam (75 minutes)              |
| 1.0003.0.01                                                | External and Internal Accounting                 |             | 5  |    |    |    |     |    | 4  |    |    |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Written Exam (75 minutes)              |
| 1.0022.0.01                                                | International Strategic Management               |             |    | 5  |    |    |     |    |    | 2  |    |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Written Exam (75 minutes)              |
| Subject Area: Informatics and Programming                  |                                                  |             |    |    |    |    |     |    |    |    |    |                     |    |                                 |                                                                                                                                     |                                             |            |                                        |
| 1.0105.0.01                                                | Fundamentals of Business Informatics             | 5           |    |    |    |    |     | 4  |    |    |    |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Written Exam (75 minutes)              |
| 1.0106.0.01                                                | Programming I                                    |             |    | 5  |    |    |     |    | 4  |    |    |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Portfolio                              |
| 1.0107.0.01                                                | Software Engineering                             |             |    |    | 5  |    |     |    |    | 4  |    |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Presentation and Handout               |
| 1.0108.0.01                                                | Programming II                                   |             |    |    |    | 5  |     |    |    |    | 4  |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Portfolio                              |
| 1.0109.0.01                                                | IT Project Management                            |             |    |    |    |    | 8   |    |    |    |    | 5                   |    | 14                              | 56                                                                                                                                  | 130                                         | M          | Written Exam (120 minutes)             |
| Subject Area: Mathematics, Statistics and Research Methods |                                                  |             |    |    |    |    |     |    |    |    |    |                     |    |                                 |                                                                                                                                     |                                             |            |                                        |
| 1.0006.0.01                                                | Business Mathematics                             | 5           |    |    |    |    |     | 4  |    |    |    |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Written Exam (75 minutes)              |
| 1.0007.0.01                                                | Statistics                                       | 5           |    |    |    |    |     |    | 5  |    |    |                     |    | 14                              | 56                                                                                                                                  | 55                                          | M          | Written Exam (75 minutes)              |
| 1.0110.0.01                                                | Scientific Work and AI                           | 5           |    |    |    |    |     |    | 4  |    |    |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Term Paper                             |
| 1.0111.0.01                                                | Advanced Mathematics                             |             | 5  |    |    |    |     |    |    | 4  |    |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Written Exam (75 minutes)              |
| Subject Area: Artificial Intelligence and Data Management  |                                                  |             |    |    |    |    |     |    |    |    |    |                     |    |                                 |                                                                                                                                     |                                             |            |                                        |
| 1.0112.0.01                                                | Introduction to Artificial Intelligence          | 5           |    |    |    |    |     | 4  |    |    |    |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Written Exam (75 minutes)              |
| 1.0113.0.01                                                | Data Bases and Information Systems               |             |    | 5  |    |    |     |    |    | 4  |    |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Written Exam (75 minutes)              |
| 1.0114.0.01                                                | Machine Learning                                 |             |    | 5  |    |    |     |    |    |    | 4  |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Written Exam (75 minutes)              |
| 1.0115.0.01                                                | Big Data and Cloud Computing                     |             |    |    | 5  |    |     |    |    |    | 4  |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Case Study                             |
| Subject Area: Legal-Normative Competences                  |                                                  |             |    |    |    |    |     |    |    |    |    |                     |    |                                 |                                                                                                                                     |                                             |            |                                        |
| 1.0010.0.01                                                | Civil and Labor Law                              |             |    | 5  |    |    |     |    | 4  |    |    |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Written Exam (75 minutes)              |
| 1.0011.0.01                                                | Commercial and Corporate Law                     |             |    |    | 5  |    |     |    |    |    | 3  |                     |    | 14                              | 28                                                                                                                                  | 83                                          | M          | Written Exam (75 minutes)              |
| 1.0116.0.01                                                | Law for AI and Informatics                       |             |    |    |    |    | 5   |    |    |    |    | 4                   |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Written Exam (75 minutes)              |
| 1.0117.0.01                                                | Ethics in AI and Society                         |             |    |    |    |    |     | 5  |    |    |    |                     | 4  | 14                              | 42                                                                                                                                  | 69                                          | M          | Presentation and Handout               |
| Subject Area: Interdisciplinary Competences                |                                                  |             |    |    |    |    |     |    |    |    |    |                     |    |                                 |                                                                                                                                     |                                             |            |                                        |
| 1.0012.0.01                                                | Business English and Intercultural Communication |             |    | 5  |    |    |     |    |    | 4  |    |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Presentation and Handout               |
| 1.0014.0.01                                                | Agile Project Management                         |             |    | 5  |    |    |     |    |    | 2  |    |                     |    | 14                              | 14                                                                                                                                  | 97                                          | M          | Oral Exam or Written Exam (75 minutes) |
| Subject Area: Specialization in Business Administration    |                                                  |             |    |    |    |    |     |    |    |    |    |                     |    |                                 |                                                                                                                                     |                                             |            |                                        |
| 1.0118.0.01                                                | Introduction to ERP- and CRM-Systems             |             |    |    | 5  |    |     |    |    |    | 4  |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Written Exam (75 minutes)              |
| 1.0119.0.01                                                | Digital Marketing with AI                        |             |    |    |    | 5  |     |    |    |    | 4  |                     |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Presentation and Handout               |
| 1.0120.0.01                                                | Change Management and Digital Transformation     |             |    |    |    |    | 5   |    |    |    |    | 4                   |    | 14                              | 42                                                                                                                                  | 69                                          | M          | Written Exam (75 minutes)              |
| 1.0015.0.01                                                | Business Simulation                              |             |    |    |    | 5  |     |    |    |    |    | 3                   |    | 14                              | 28                                                                                                                                  | 83                                          | M          | Project Report                         |
| 1.0027.0.01                                                | Innovation Management and Entrepreneurship       |             |    |    |    |    |     | 5  |    |    |    |                     | 3  | 14                              | 28                                                                                                                                  | 83                                          | M          | Written Exam (75 minutes)              |
| Subject Area: Compulsory Elective Concentration            |                                                  |             |    |    |    |    |     |    |    |    |    |                     |    |                                 |                                                                                                                                     |                                             |            |                                        |
| CEC1                                                       | Compulsory Elective Concentration I              |             |    |    |    | 15 |     |    |    |    | 10 |                     |    | 42                              | 98                                                                                                                                  | 235                                         | CEC        | varies                                 |
| CEC2                                                       | Compulsory Elective Concentration II             |             |    |    |    |    | 15  |    |    |    |    | 10                  |    | 42                              | 98                                                                                                                                  | 235                                         | CEC        | varies                                 |
| Subject Area: Bachelor Examination                         |                                                  |             |    |    |    |    |     |    |    |    |    |                     |    |                                 |                                                                                                                                     |                                             |            |                                        |
| 1.0121.0.01                                                | Bachelor's Thesis                                |             |    |    |    |    |     | 12 |    |    |    |                     | 0  | 0                               | 0                                                                                                                                   | 300                                         | M          | Thesis                                 |
| Total ECTS Points / SWS per Semester                       |                                                  | 30          | 30 | 30 | 30 | 30 | 30  | 25 | 22 | 21 | 22 | 21                  | 12 |                                 |                                                                                                                                     |                                             |            |                                        |
| Total ECTS Points / Total SWS per Semester                 |                                                  | 180         |    |    |    |    |     |    |    |    |    |                     |    | 123                             |                                                                                                                                     |                                             |            |                                        |
| Total Workload                                             |                                                  |             |    |    |    |    |     |    |    |    |    |                     |    | 462                             | 1288                                                                                                                                | 2750                                        |            |                                        |
|                                                            |                                                  |             |    |    |    |    |     |    |    |    |    |                     |    | 4500                            |                                                                                                                                     |                                             |            |                                        |

| Concentrations in the Business Informatics & AI (B.Sc.) program - at least 1 concentration from the program, the second concentration may be chosen from the bachelor's study program International Business Administration (B.A.) |                                        |  |  |  |   |  |  |  |  |   |   |  |  |    |    |    |     |                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--|--|--|---|--|--|--|--|---|---|--|--|----|----|----|-----|---------------------------|
| <b>1.S.012.S.01 IT Security Management</b>                                                                                                                                                                                         |                                        |  |  |  |   |  |  |  |  |   |   |  |  |    |    |    |     |                           |
| 1.0122.0.01                                                                                                                                                                                                                        | Cyber Security                         |  |  |  | 5 |  |  |  |  | 4 |   |  |  | 14 | 28 | 69 | CEM | Written Exam (75 Minutes) |
| 1.0123.0.01                                                                                                                                                                                                                        | Security Management and Compliance     |  |  |  | 5 |  |  |  |  | 4 |   |  |  | 14 | 28 | 69 | CEM | Term Paper                |
| 1.0124.0.01                                                                                                                                                                                                                        | Network Security                       |  |  |  | 5 |  |  |  |  |   | 2 |  |  | 14 | 14 | 97 | CEM | Presentation and Handout  |
| <b>1.S.013.S.01 AI and Robotics</b>                                                                                                                                                                                                |                                        |  |  |  |   |  |  |  |  |   |   |  |  |    |    |    |     |                           |
| 1.0125.0.01                                                                                                                                                                                                                        | Robotics and Autonomous Systems        |  |  |  | 5 |  |  |  |  | 4 |   |  |  | 14 | 28 | 69 | CEM | Term Paper                |
| 1.0126.0.01                                                                                                                                                                                                                        | Natural Language Processing (NLP)      |  |  |  | 5 |  |  |  |  |   | 4 |  |  | 14 | 28 | 69 | CEM | Written Exam (75 Minutes) |
| 1.0127.0.01                                                                                                                                                                                                                        | Human-Robot-Interaction                |  |  |  | 5 |  |  |  |  |   | 2 |  |  | 14 | 14 | 97 | CEM | Presentation and Handout  |
| <b>1.S.014.S.01 Digital Transformation</b>                                                                                                                                                                                         |                                        |  |  |  |   |  |  |  |  |   |   |  |  |    |    |    |     |                           |
| 1.0128.0.01                                                                                                                                                                                                                        | Digital Strategies and Business Models |  |  |  | 5 |  |  |  |  | 4 |   |  |  | 14 | 28 | 69 | CEM | Term Paper                |
| 1.0129.0.01                                                                                                                                                                                                                        | IT Strategy and Governance             |  |  |  | 5 |  |  |  |  |   | 4 |  |  | 14 | 28 | 69 | CEM | Written Exam (75 Minutes) |
| 1.0130.0.01                                                                                                                                                                                                                        | New Work                               |  |  |  | 5 |  |  |  |  |   | 2 |  |  | 14 | 14 | 97 | CEM | Presentation and Handout  |

| <sup>1)</sup> Legend    |                                       |
|-------------------------|---------------------------------------|
| Compound Study Programs |                                       |
| IBA                     | International Business Administration |
| PSY                     | Psychology                            |
| BP                      | Business Psychology                   |
| SMM                     | Social Media Management               |
| Type                    |                                       |
| M                       | Mandatory Module                      |
| CEM                     | Compulsory Elective Module            |
| CEC                     | Compulsory Elective Concentration     |
| E                       | Extracurricular Optional Module       |

| <b>***) Note:</b>                                                                                                                                                                                                                                                                           |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| The introductory project on self-organized learning is an optional, extracurricular module aimed at first-year students before the start of the lecture period, which provides knowledge about the online systems to be used in the study program as well as methods for self-organization. |  |

Table 7: Study plan of the 6-semester full-time model.

## 1.6. Study plan of the 8 semester part-time model

| Business Informatics & AI (B.Sc.) - Part Time              |                                                  |             |    |    |    |    |    |    |    |     |    |    |    |    |    |    |   |                                 |                                             |  INNOVATIVE<br>UNIVERSITY<br>OF APPLIED SCIENCES |                   |                                        |  |  |  |
|------------------------------------------------------------|--------------------------------------------------|-------------|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|---|---------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------------------|--|--|--|
| Module no.                                                 | Module name                                      | ECTS Points |    |    |    |    |    |    |    | SWS |    |    |    |    |    |    |   | Workload (in hours)             |                                             |                                                                                                                                     | Type <sup>1</sup> | Prerequisite for the award of credits  |  |  |  |
|                                                            |                                                  | 1           | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 1   | 2  | 3  | 4  | 5  | 6  | 7  | 8 | Synchronous contact time online | Asynchronous contact time guided self-study | Self-study                                                                                                                          |                   | Forms of examination                   |  |  |  |
| Subject Area: Introduction to Self-organized Learning **)  |                                                  |             |    |    |    |    |    |    |    |     |    |    |    |    |    |    |   |                                 |                                             |                                                                                                                                     |                   |                                        |  |  |  |
| 1.0001.0.01                                                | Introduction to Self-organized Learning          |             |    |    |    |    |    |    | 1  |     |    |    |    |    |    |    |   |                                 |                                             |                                                                                                                                     | E                 | -                                      |  |  |  |
| Subject Area: Economic Fundamentals                        |                                                  |             |    |    |    |    |    |    |    |     |    |    |    |    |    |    |   |                                 |                                             |                                                                                                                                     |                   |                                        |  |  |  |
| 1.0002.0.01                                                | Fundamental of Business Administration           | 5           |    |    |    |    |    |    | 4  |     |    |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| 1.0003.0.01                                                | External and Internal Accounting                 |             | 5  |    |    |    |    |    |    | 4   |    |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| 1.0022.0.01                                                | International Strategic Management               |             |    | 5  |    |    |    |    |    |     | 2  |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| Subject Area: Informatics and Programming                  |                                                  |             |    |    |    |    |    |    |    |     |    |    |    |    |    |    |   |                                 |                                             |                                                                                                                                     |                   |                                        |  |  |  |
| 1.0105.0.01                                                | Fundamentals of Business Informatics             | 5           |    |    |    |    |    |    | 4  |     |    |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| 1.0106.0.01                                                | Programming I                                    |             |    | 5  |    |    |    |    | 4  |     |    |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Portfolio                              |  |  |  |
| 1.0107.0.01                                                | Software Engineering                             |             |    |    | 5  |    |    |    |    | 4   |    |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Presentation and Handout               |  |  |  |
| 1.0108.0.01                                                | Programming II                                   |             |    |    |    | 5  |    |    |    |     | 4  |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Portfolio                              |  |  |  |
| 1.0109.0.01                                                | IT Project Management                            |             |    |    |    |    |    |    | 8  |     |    |    |    |    |    |    | 5 | 14                              | 56                                          | 130                                                                                                                                 | M                 | Written Exam (120 minutes)             |  |  |  |
| Subject Area: Mathematics, Statistics and Research Methods |                                                  |             |    |    |    |    |    |    |    |     |    |    |    |    |    |    |   |                                 |                                             |                                                                                                                                     |                   |                                        |  |  |  |
| 1.0006.0.01                                                | Business Mathematics                             | 5           |    |    |    |    |    |    | 4  |     |    |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| 1.0007.0.01                                                | Statistics                                       |             | 5  |    |    |    |    |    |    | 5   |    |    |    |    |    |    |   | 14                              | 56                                          | 55                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| 1.0110.0.01                                                | Scientific Work and AI                           |             | 5  |    |    |    |    |    |    |     | 4  |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Term Paper                             |  |  |  |
| 1.0111.0.01                                                | Advanced Mathematics                             |             | 5  |    |    |    |    |    |    |     |    | 4  |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| Subject Area: Artificial Intelligence and Data Management  |                                                  |             |    |    |    |    |    |    |    |     |    |    |    |    |    |    |   |                                 |                                             |                                                                                                                                     |                   |                                        |  |  |  |
| 1.0112.0.01                                                | Introduction to Artificial Intelligence          | 5           |    |    |    |    |    |    | 4  |     |    |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| 1.0113.0.01                                                | Data Bases and Information Systems               |             |    | 5  |    |    |    |    |    |     | 4  |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| 1.0114.0.01                                                | Machine Learning                                 |             |    |    |    | 5  |    |    |    |     |    |    | 4  |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| 1.0115.0.01                                                | Big Data and Cloud Computing                     |             |    |    |    |    |    | 5  |    |     |    |    |    |    |    | 4  |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Case Study                             |  |  |  |
| Subject Area: Legal-Normative Competences                  |                                                  |             |    |    |    |    |    |    |    |     |    |    |    |    |    |    |   |                                 |                                             |                                                                                                                                     |                   |                                        |  |  |  |
| 1.0010.0.01                                                | Civil and Labor Law                              |             | 5  |    |    |    |    |    |    | 4   |    |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| 1.0011.0.01                                                | Commercial and Corporate Law                     |             |    |    | 5  |    |    |    |    |     | 3  |    |    |    |    |    |   | 14                              | 28                                          | 83                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| 1.0116.0.01                                                | Law for AI and Informatics                       |             |    |    |    |    | 5  |    |    |     |    |    | 4  |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| 1.0117.0.01                                                | Ethics in AI and Society                         |             |    |    |    |    |    | 5  |    |     |    |    |    | 4  |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Presentation and Handout               |  |  |  |
| Subject Area: Interdisciplinary Competences                |                                                  |             |    |    |    |    |    |    |    |     |    |    |    |    |    |    |   |                                 |                                             |                                                                                                                                     |                   |                                        |  |  |  |
| 1.0012.0.01                                                | Business English and Intercultural Communication |             |    | 5  |    |    |    |    |    |     | 4  |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Presentation and Handout               |  |  |  |
| 1.0014.0.01                                                | Agile Project Management                         |             |    | 5  |    |    |    |    |    |     |    | 2  |    |    |    |    |   | 14                              | 14                                          | 97                                                                                                                                  | M                 | Oral Exam or Written Exam (75 minutes) |  |  |  |
| Subject Area: Specialization In Business Administration    |                                                  |             |    |    |    |    |    |    |    |     |    |    |    |    |    |    |   |                                 |                                             |                                                                                                                                     |                   |                                        |  |  |  |
| 1.0118.0.01                                                | Introduction to ERP- and CRM-Systems             |             |    | 5  |    |    |    |    |    |     | 4  |    |    |    |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| 1.0119.0.01                                                | Digital Marketing with AI                        |             |    |    |    |    | 5  |    |    |     |    |    |    | 4  |    |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Presentation and Handout               |  |  |  |
| 1.0120.0.01                                                | Change Management and Digital Transformation     |             |    |    |    |    |    | 5  |    |     |    |    |    |    | 4  |    |   | 14                              | 42                                          | 69                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| 1.0015.0.01                                                | Business Simulation                              |             |    |    |    |    |    | 5  |    |     |    |    |    |    |    | 3  |   | 14                              | 28                                          | 83                                                                                                                                  | M                 | Project Report                         |  |  |  |
| 1.0027.0.01                                                | Innovation Management and Entrepreneurship       |             |    |    |    |    |    |    | 5  |     |    |    |    |    |    |    | 3 | 14                              | 28                                          | 83                                                                                                                                  | M                 | Written Exam (75 minutes)              |  |  |  |
| Subject Area: Compulsory Elective Concentration            |                                                  |             |    |    |    |    |    |    |    |     |    |    |    |    |    |    |   |                                 |                                             |                                                                                                                                     |                   |                                        |  |  |  |
| CEC1                                                       | Compulsory Elective Concentration I              |             |    |    |    | 15 |    |    |    |     |    |    |    | 10 |    |    |   | 42                              | 98                                          | 235                                                                                                                                 | CEC               | varies                                 |  |  |  |
| CEC2                                                       | Compulsory Elective Concentration II             |             |    |    |    |    | 15 |    |    |     |    |    |    |    | 10 |    |   | 42                              | 98                                          | 235                                                                                                                                 | CEC               | varies                                 |  |  |  |
| Subject Area: Bachelor Examination                         |                                                  |             |    |    |    |    |    |    |    |     |    |    |    |    |    |    |   |                                 |                                             |                                                                                                                                     |                   |                                        |  |  |  |
| 1.0121.0.01                                                | Bachelor's Thesis                                |             |    |    |    |    |    |    |    | 12  |    |    |    |    |    |    | 0 | 0                               | 0                                           | 300                                                                                                                                 | M                 | Thesis                                 |  |  |  |
| Total ECTS Points / SWS per Semester                       |                                                  | 20          | 25 | 20 | 25 | 20 | 25 | 20 | 25 | 20  | 21 | 17 | 10 | 18 | 18 | 11 | 8 |                                 |                                             |                                                                                                                                     |                   |                                        |  |  |  |
| Total ECTS Points / Total SWS per Semester                 |                                                  | 180         |    |    |    |    |    |    |    | 123 |    |    |    |    |    |    |   |                                 |                                             |                                                                                                                                     |                   |                                        |  |  |  |
| Total Workload                                             |                                                  |             |    |    |    |    |    |    |    |     |    |    |    |    |    |    |   | 462                             | 1288                                        | 2750                                                                                                                                |                   |                                        |  |  |  |
|                                                            |                                                  |             |    |    |    |    |    |    |    |     |    |    |    |    |    |    |   | 4500                            |                                             |                                                                                                                                     |                   |                                        |  |  |  |

| Concentrations in the Business Informatics & AI (B.Sc.) program - at least 1 concentration from the program, the second concentration may be chosen from the bachelor's study program International Business Administration (B.A.) |                                        |  |  |  |  |   |  |  |  |  |  |  |   |   |  |  |  |    |    |    |     |                           |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--|--|--|--|---|--|--|--|--|--|--|---|---|--|--|--|----|----|----|-----|---------------------------|--|--|
| 1.S.012.S.01 IT Security Management                                                                                                                                                                                                |                                        |  |  |  |  |   |  |  |  |  |  |  |   |   |  |  |  |    |    |    |     |                           |  |  |
| 1.0122.0.01                                                                                                                                                                                                                        | Cyber Security                         |  |  |  |  | 5 |  |  |  |  |  |  | 4 |   |  |  |  | 14 | 28 | 69 | CEM | Written Exam (75 Minutes) |  |  |
| 1.0123.0.01                                                                                                                                                                                                                        | Security Management and Compliance     |  |  |  |  | 5 |  |  |  |  |  |  |   |   |  |  |  | 14 | 28 | 69 | CEM | Term Paper                |  |  |
| 1.0124.0.01                                                                                                                                                                                                                        | Network Security                       |  |  |  |  | 5 |  |  |  |  |  |  | 2 |   |  |  |  | 14 | 14 | 97 | CEM | Presentation and Handout  |  |  |
| 1.S.013.S.01 AI and Robotics                                                                                                                                                                                                       |                                        |  |  |  |  |   |  |  |  |  |  |  |   |   |  |  |  |    |    |    |     |                           |  |  |
| 1.0125.0.01                                                                                                                                                                                                                        | Robotics and Autonomous Systems        |  |  |  |  | 5 |  |  |  |  |  |  | 4 |   |  |  |  | 14 | 28 | 69 | CEM | Term Paper                |  |  |
| 1.0126.0.01                                                                                                                                                                                                                        | Natural Language Processing (NLP)      |  |  |  |  | 5 |  |  |  |  |  |  | 4 |   |  |  |  | 14 | 28 | 69 | CEM | Written Exam (75 Minutes) |  |  |
| 1.0127.0.01                                                                                                                                                                                                                        | Human-Robot-Interaction                |  |  |  |  | 5 |  |  |  |  |  |  | 2 |   |  |  |  | 14 | 14 | 97 | CEM | Presentation and Handout  |  |  |
| 1.S.014.S.01 Digital Transformation                                                                                                                                                                                                |                                        |  |  |  |  |   |  |  |  |  |  |  |   |   |  |  |  |    |    |    |     |                           |  |  |
| 1.0128.0.01                                                                                                                                                                                                                        | Digital Strategies and Business Models |  |  |  |  | 5 |  |  |  |  |  |  | 4 |   |  |  |  | 14 | 28 | 69 | CEM | Term Paper                |  |  |
| 1.0129.0.01                                                                                                                                                                                                                        | IT Strategy and Governance             |  |  |  |  | 5 |  |  |  |  |  |  |   | 4 |  |  |  | 14 | 28 | 69 | CEM | Written Exam (75 Minutes) |  |  |
| 1.0130.0.01                                                                                                                                                                                                                        | New Work                               |  |  |  |  | 5 |  |  |  |  |  |  |   | 2 |  |  |  | 14 | 14 | 97 | CEM | Presentation and Handout  |  |  |

Table 8: Study plan of the 8-semester part-time model

## 2 Introduction to self-organized learning

### 2.1 Introductory Project on Self-Organized Learning (1.0001.0.01) (optional, extracurricular)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Duration   |                                 | Semester of study                           |    | Frequency of the offer | Type |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------------|---------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                 | FT                                          | PT |                        |      |
| 1.0001.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1 semester |                                 | 1                                           | 1  | every WS and SS        | E    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SWS        | Synchronous contact time online | Asynchronous contact time guided self-study |    | Self-study             |      |
| - h                   | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1          | - h                             | - h                                         |    | - h                    |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                 |                                             |    |                        |      |
| 1                     | <b>Courses:</b> <ul style="list-style-type: none"><li>Introductory Project on Self-Organized Learning (1.0001.0.01) (optional, extracurricular) (1 SWS)</li></ul> Note: The Introductory Project on Self-Organized Learning (1.0001.0.01) (optional, extracurricular) takes place before the beginning of the regular lecture periods of the other curricular contents for students starting the course of studies in order to present to the students the various possibilities of the online systems used. Furthermore, they will get an overview of communication tools to other students or to lecturers and be familiarized with methods of self-organized learning.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                 |                                             |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>Upon successful completion of the module, students will be able to,</p> <ul style="list-style-type: none"><li>... log in to the online systems of INU - Innovative University of Applied Sciences and understand and use the functionalities,</li><li>... develop adequate self and time management for themselves,</li><li>... apply various learning and working techniques and use digital media for communication, collaboration and organization,</li><li>... network with fellow students to form learning groups,</li><li>... contact professors digitally and use various interactive communication channels,</li><li>... create their own learning plans for their studies and reflect on and make adjustments to learning strategies,</li><li>... use learning platform tools and digital tools to communicate and collaborate with each other, and be able to assess and evaluate concepts for online-related communication in professional life,</li><li>... carry out study-related administrative processes digitally using the online systems, and</li><li>... participate in online tests to monitor success.</li></ul> |            |                                 |                                             |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Virtual learning processes - an introduction</li><li>Online systems of the INU</li><li>Online studies and learning projects - knowledge management</li><li>Focusing on learning</li><li>Communication</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                 |                                             |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Explanation of IT systems and methods with case studies in the form of learning videos and digital literature.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, and literature study.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                 |                                             |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is assumed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                 |                                             |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>none</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                 |                                             |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>No ECTS points will be awarded.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                 |                                             |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The module does not count towards the final grade.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                 |                                             |    |                        |      |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>9</b>  | <b>Responsible for the module</b><br>See curriculum.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>10</b> | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>• Amen, D. A./Amen, C./Castellanos, A. (2019): Change Your Brain, Change Your Grades : The Secrets of Successful Students: Science-Based Strategies to Boost Memory, Strengthen Focus, and Study Faster, 1st edition, Dallas.</li><li>• Fry, J. (2018): Get organized, 4th edition, New York.</li><li>• James, A. (2021): Say 'No' to Exam Stress : The Easy to Use Programme to Survive Exam Nerves, 1st edition, New York.</li><li>• Selhub, E. (2019): The Stress Management Handbook : A Practical Guide to Staying Calm, Keeping Cool, and Avoiding Blow-Ups, 1st edition, New York.</li></ul> |

### 3 Economic Fundamentals

#### 3.1 Fundamentals of Business Administration (1.0002.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   | FT                                            | PT |                        |      |
| 1.0002.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1 semester |                                   | 1                                             | 1  | every WS and SS        | M    |
| Total workload        | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4          | 14 h                              | 42 h                                          |    | 69h                    |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Fundamentals of Business Administration (1.0002.0.01) (2 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>Upon successful completion of the module, students will be able to,</p> <ul style="list-style-type: none"><li>... define and explain business management terminology,</li><li>... describe economic cycles and their interrelationships and distinguish between market participants,</li><li>... present organizational forms and describe operational functions, especially possible strategies, goals, and objectives,</li><li>... define, explain and apply the instruments of modern corporate management, and</li><li>... explain strategic business management, in particular the methods and concepts as well as categorize the purposes for which they are used.</li></ul> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Introduction to business administration</li><li>Corporate management</li><li>Fundamental decisions</li><li>Methodology of strategic corporate management</li><li>Functions of business administration</li><li>Accompanying and supporting functions and tasks</li><li>Learning organizations</li></ul>                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                           |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is assumed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade goes with a proportion of 5/180 ECTS points into the final grade.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                   |                                               |    |                        |      |
| 9                     | <b>Responsible for the module</b> <p>See curriculum.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Brandsen, T. (2018). Co-Production and Co-Creation. Engaging Citizens in Public Services (Routledge Critical Studies in Public Management Series). Milton: Taylor &amp; Francis Group.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |    |                        |      |

- Institute for Career Research. (2007). Executive careers in business administration. Chief executive officer/CEO, chief operating officer/COO, chief financial officer/CFO, president, executive/senior vice president (Institute research, no. 178). Chicago, Ill.: Institute for Career Research.
- Marques, J. (Ed.). (2012). Business administration education. Changes in management and leadership strategies. Basingstoke: Palgrave Macmillan.
- Thommen, J.-P. & Grösser, S. N. (2014). Economy, Company, Management. Introduction to Business Administration (Vahlen eLibrary, 2. Auflage). Zürich, München: Versus; Verlag Franz Vahlen. <https://doi.org/10.24096/9783039097128>

**Further reading**

- Dresdner, M. (2014). Bridge to business school. [United States]: Babelcube Inc.; Made available through hoopla.
- Richards, L. (2014). Strategic Reading 2 Std Book. Florence: Routledge.

### 3.2 External and internal Accounting (1.0003.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     | Duration                          |  | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------|--|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |  | FT                                            | PT |                        |      |
| 1.0003.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     | 1 semester                        |  | 2                                             | 2  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SWS | Synchronous contact time - online |  | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 4   | 14 h                              |  | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |  |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>External and internal Accounting (1.0003.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                                   |  |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... know and describe the differences between internal and external accounting,</li><li>... explain the interfaces between internal and external accounting,</li><li>... identify and assess internal and external information,</li><li>... assess and calculate the balance sheet and the success of a company, as well as to present it in basic accounting terms, and</li><li>... to recognize and assess the limits of number-based decisions and to criticize them.</li></ul>                                                                                                                                                                                                                                                                                   |     |                                   |  |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Introduction</li><li>Fundamentals of external accounting</li><li>Basics of cost and activity accounting</li><li>Fundamentals of controlling</li><li>Case Studies</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |                                   |  |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                          |     |                                   |  |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                                   |  |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |                                   |  |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |                                   |  |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                   |  |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |  |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Basioudis, I. G. (2019). Financial accounting. The basics (The basics). London, New York: Routledge.</li><li>Bellandi, F. (2018). Materiality in financial reporting. An integrative perspective (First edition). Bingley, UK: Emerald Publishing Limited.</li><li>Eisen, P. J. (2013). Accounting (Business review books, Sixth edition). Hauppauge, New York: Barron's Educational Series Inc.</li><li>Scagnelli, S. (2019). Introduction to Financial Accounting (2nd ed.). Turin: Giappichelli. Verfügbar unter: <a href="https://ebookcentral.proquest.com/lib/kxp/detail.action?docID=5755711">https://ebookcentral.proquest.com/lib/kxp/detail.action?docID=5755711</a></li></ul> <b>Further reading</b> <ul style="list-style-type: none"><li>Internal control and internal audit. (2010). New York: Addleton Academic Publishers.</li></ul> |     |                                   |  |                                               |    |                        |      |

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| <ul style="list-style-type: none"><li>• Mafrolla, E. (2017). Management accounting when an organization is facing default. Torino: G. Giappichelli Editore.</li><li>• Schutte, M. (2018). Accounting for All (3rd ed.). Cape Town: Juta &amp; Company Limited.</li></ul> |
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### 3.3 International Strategic Management (1.0022.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     | Duration                          |  | Semester of study                             |    | Frequency of the offer |            | Type |  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------|--|-----------------------------------------------|----|------------------------|------------|------|--|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |  | FT                                            | PT |                        |            |      |  |
| 1.0022.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     | 1 semester                        |  | 3                                             | 3  | every WS and SS        |            | M    |  |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SWS | Synchronous contact time - online |  | Asynchronous contact time - guided self-study |    |                        | Self-study |      |  |
| 125h                  | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2   | 14 h                              |  | 14 h                                          |    |                        | 97 h       |      |  |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |  |                                               |    |                        |            |      |  |
| 1                     | <b>Courses:</b> <ul style="list-style-type: none"><li>International Strategic Management (1.0022.0.01) (2 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |                                   |  |                                               |    |                        |            |      |  |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to,</p> <p>... independently analyze and evaluate strategic decisions of internationally operating companies,</p> <p>... to understand the sustainable development of companies in an international context,</p> <p>... recognize the need for strategic development as a result of digitalization or other changing framework conditions,</p> <p>... to follow current trends and challenges in international strategic management,</p> <p>... explain international strategy options and</p> <p>... apply the various issues of internationalization to practical problems.</p> |     |                                   |  |                                               |    |                        |            |      |  |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Basics</li><li>Concepts in international strategic management</li><li>Selected case studies</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                   |  |                                               |    |                        |            |      |  |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                          |     |                                   |  |                                               |    |                        |            |      |  |
| 5                     | <b>Participation requirements</b> <p>It is recommended to have successfully completed the module Fundamentals of Business Administration (1.0002.0.01).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |                                   |  |                                               |    |                        |            |      |  |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |                                   |  |                                               |    |                        |            |      |  |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |                                   |  |                                               |    |                        |            |      |  |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                   |  |                                               |    |                        |            |      |  |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |  |                                               |    |                        |            |      |  |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Ansoff, Harry Igor (2007): Strategic Management. Basingstoke: Palgrave Macmillan Ltd. Online available at <a href="http://gbv.ebib.com/patron/FullRecord.aspx?p=736069">http://gbv.ebib.com/patron/FullRecord.aspx?p=736069</a>.</li><li>Dobson, Paul W. (2009): Strategic Management. Issues and Cases. 2nd ed. Hoboken: John Wiley &amp; Sons Ltd.</li><li>Ocvirk, Gorazd (2018): Strategic Management of Market Niches. A Model Framework. Wiesbaden: Springer Gabler (Springer eBook Collection Business and Management).</li></ul> <b>Further reading</b>                                                       |     |                                   |  |                                               |    |                        |            |      |  |

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| <ul style="list-style-type: none"><li>• Blawatt, Ken R. (2014): Entrepreneurial strategic management. First edition. New York, New York: Business Expert Press (Strategic management collection). Online available at <a href="https://portal.ig-publish.com/iglibrary/search/BEPB0000255.html">https://portal.ig-publish.com/iglibrary/search/BEPB0000255.html</a>.</li><li>• Morrison, Edward; Hutcheson, Scott; Nilsen, Elizabeth; Fadden, Janyce; Franklin, Nancy (2019): Strategic doing. Ten skills for agile leadership. Hoboken, New Jersey: Wiley.</li><li>• Wunder, Thomas (Hg.) (2019): Rethinking strategic management. Sustainable strategizing for positive impact. Cham, Switzerland: Springer (CSR, sustainability, ethics &amp; governance).</li></ul> |
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## 4 Informatics and Programming

### 4.1 Fundamentals of Business Informatics (1.0105.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   | FT                                            | PT |                        |      |
| 1.0105.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 semester |                                   | 1                                             | 1  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4          | 14 h                              | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses:</b> <ul style="list-style-type: none"><li>Fundamentals of Business Informatics (1.0105.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to,</p> <p>... understand and apply concepts, methods, models and theories of business information systems,</p> <p>... analyze the role of business information systems in companies and organizations,</p> <p>... classify current technologies, systems and trends in the field of digital transformation,</p> <p>... evaluate operational information systems and their architecture,</p> <p>... recognize economic and technological challenges in connection with IT strategies and digitalization,</p> <p>... reflect on current trends and challenges in business informatics.</p> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Fundamentals of business informatics</li><li>Information systems in companies</li><li>Business process modeling</li><li>Digital transformation and current trends</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                  |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Weber, P./Gabriel, R./Lux, T./Menke, K. (2022): Basics in Business Informatics, 2<sup>nd</sup> ed., Wiesbaden, Springer.</li></ul> <b>Further reading</b> <ul style="list-style-type: none"><li>Laudon, K.C.; Laudon, J.P.; Schoder, D. (2015) Information Systems, London.</li><li>Zellner, G. (2024): A basic outline of the business discipline of business informatics. In: BIT: Banking and Information Technology, Mar 2024. p. 50-58</li><li>Lindermeier, R. (2021): Building blocks of business informatics: a basic introduction, Düren.</li></ul>                                                                  |            |                                   |                                               |    |                        |      |

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|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"><li>• Nees, F./Stengel, I./Meister, V.G. et al. (2021): Applied Research in Information Systems: Contributions to the symposium "Applied Research in Information Systems 2021" at the 34th AKWI Annual Conference of the Arbeitskreis Wirtschaftsinformatik an Hochschulen für Angewandte Wissenschaften (AKWI), Karlsruhe.</li></ul> |
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## 4.2 Programming I (1.0106.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     | Duration                          |  | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------|--|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |                                   |  | FT                                            | PT |                        |      |
| 1.0106.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     | 1 semester                        |  | 2                                             | 2  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SWS | Synchronous contact time - online |  | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4   | 14 h                              |  | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |                                   |  |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Programming I (1.0106.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |                                   |  |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>Students acquire basic knowledge and skills in programming in order to systematically develop software solutions. After successfully completing the module, they will be able to</p> <ul style="list-style-type: none"><li>... understand and apply the basic concepts of object-oriented and functional programming.</li><li>... compare different programming languages (e.g. Python, Java, C, C++) and evaluate their possible applications.</li><li>... use variables, data types, operators and control structures in different programming languages.</li><li>... Write functions, procedures and modular code to ensure reusability and maintainability.</li><li>... Understand object-oriented programming (OOP) with classes, inheritance and polymorphism and use them in software projects.</li><li>... implement important data structures such as arrays, lists, stacks, queues, hash maps and trees and use them for algorithmic problem solving.</li><li>... efficiently develop and optimize algorithms for data processing and searches.</li><li>... systematically apply debugging methods and troubleshooting techniques in development environments.</li><li>... Use version control systems (e.g. Git) for collaborative software development.</li><li>... understand and apply basic concepts of parallel and concurrent programming.</li></ul> |     |                                   |  |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Introduction to programming</li><li>Basic programming concepts</li><li>Data structures and algorithms</li><li>Object-oriented programming (OOP)</li><li>Troubleshooting, debugging and optimization</li><li>Software development and version control</li><li>Use cases and project work</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |                                   |  |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |                                   |  |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                   |  |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Portfolio</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                   |  |                                               |    |                        |      |
| 7                     | <b>Requirements for the awarding of ECTS credits</b> <p>Students complete this module with a portfolio of 10 to 12 pages. The prerequisite for the awarding of ECTS points is passing the portfolio with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |                                   |  |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |                                   |  |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |                                   |  |                                               |    |                        |      |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10 | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>• Prinz, A./Møller-Pedersen, B./Fischer, J./Thalheim, B. (2024): Understanding Modeling and Programming, Cham.</li></ul> <b>Further reading</b> <ul style="list-style-type: none"><li>• Ackermann, P. (2023): Full Stack Web Development: A Comprehensive, Hands-On Guide to Building Modern Websites and Applications. Bonn.</li><li>• Downey, A. (2015): Think Python: How to Think Like a Computer Scientist. Sebastopol.</li><li>• Guttag, J. (2021). Introduction to Computation and Programming Using Python. Cambridge.</li><li>• Sedgewick, R.; Wayne, K. (2023). Algorithms. 4<sup>th</sup>. Ed. Sebastopol.</li><li>• Stroustrup, B. (2013): The C++ Programming Language. Boston.</li><li>• Zelle, J. M. (2024): Python Programming: An Introduction to Computer Science, 4<sup>th</sup> Ed. Portland.</li></ul> |
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### 4.3 Software Engineering (1.0107.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     | Duration                          |  | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------|--|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |                                   |  | FT                                            | PT |                        |      |
| 1.0107.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     | 1 semester                        |  | 3                                             | 3  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SWS | Synchronous contact time - online |  | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4   | 14 h                              |  | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |                                   |  |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Software Engineering (1.0107.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                                   |  |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to,</p> <ul style="list-style-type: none"><li>... Understand the basics of software engineering and systematically plan software development processes.</li><li>... Analyze, specify and model requirements for software solutions,</li><li>... Evaluate and apply modern software development approaches and architectures (e.g. microservices, cloud computing),</li><li>... Evaluate and use container technologies,</li><li>... Develop test and quality assurance strategies to develop robust and scalable software solutions.</li></ul> |     |                                   |  |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Fundamentals of software engineering</li><li>Requirements analysis &amp; modeling</li><li>Software architecture &amp; development methods</li><li>Container technologies</li><li>Test automation with the help of unit tests</li></ul>                                                                                                                                                                                                                                                                                                                                                  |     |                                   |  |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                       |     |                                   |  |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |                                   |  |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Presentation and handout</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                                   |  |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with a presentation and handout. The presentation has a length of 10 minutes, the corresponding handout has a length of 3 pages. It is possible to do the presentation as a group work. Further details are regulated by the examination regulations and guidelines of the examination office. Prerequisite for the award of ECTS credits is a grade of at least 4.0 for the presentation and handout.</p>                                                                                                                                                      |     |                                   |  |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                                   |  |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |                                   |  |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Pressman, R.; Maxim, B. (2019): Software Engineering: A Practitioner's Approach, 9th ed., New York.</li><li>Ingeno, J. (2018): Software Architect's Handbook: Become a successful software architect by implementing effective architecture concepts, Birmingham.</li></ul> <b>Further reading</b> <ul style="list-style-type: none"><li>Heusser, M./Larsen, M. (2023): Software Testing Strategies: A testing guide for the 2020s, Birmingham.</li><li>Ford, N./ Richards, M. (2020): Fundamentals of Software Architecture. An Engineering Approach, Newton.</li></ul>          |     |                                   |  |                                               |    |                        |      |

## 4.4 Programming II (1.0108.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     | Duration                          |  | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------|--|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |  | FT                                            | PT |                        |      |
| 1.0108.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     | 1 semester                        |  | 4                                             | 4  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SWS | Synchronous contact time - online |  | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 4   | 14 h                              |  | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |  |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Programming II (1.0108.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |                                   |  |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>In this module, students deepen their knowledge from the module "Programming I" and learn advanced concepts and techniques for developing complex software solutions. After successfully completing the module, they will be able to,</p> <ul style="list-style-type: none"><li>... apply advanced programming techniques in various programming languages (e.g. Python, Java, C++).</li><li>... Understand design patterns and best practices for software architecture and use them in software development.</li><li>... functional programming paradigms and their advantages in programming languages such as Python, Scala or Haskell.</li><li>... to implement asynchronous and parallel programming with multithreading, processes and event-driven programming.</li><li>... implement advanced algorithms and data structures, including graphs, heaps and advanced sorting methods.</li><li>... to integrate database connections and persistent storage technologies into software solutions.</li><li>... Use Web development with modern frameworks and API design for REST or GraphQL interfaces.</li><li>... write Test-Driven Development (TDD) and unit and integration tests to ensure code quality.</li><li>... to consider security aspects in software development, including secure programming techniques and protective measures against attacks.</li></ul> |     |                                   |  |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Advanced programming concepts</li><li>Parallel and concurrent programming</li><li>Data structures and advanced algorithms</li><li>Database integration and persistence</li><li>Web development and API design</li><li>Test-driven development and software quality</li><li>Security in software development</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                   |  |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                                   |  |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>Knowledge from the module Programming I (1.0106.0.01) is assumed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                   |  |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Portfolio</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |                                   |  |                                               |    |                        |      |
| 7                     | <b>Requirements for the awarding of ECTS credits</b> <p>Students complete this module with a portfolio of 10 to 12 pages. The prerequisite for the awarding of ECTS points is passing the portfolio with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                                   |  |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                   |  |                                               |    |                        |      |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>9</b>  | <b>Person responsible for the module</b><br>See study plan.                                                                                                                                                                                                                                                                                                                                                     |
| <b>10</b> | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>• Fowler, M. (2019): Refactoring: Improving the Design of Existing Code. Boston</li><li>• Hunt, A./Thomas, D. (2019): The Pragmatic Programmer: Your Journey To Mastery. Boston.</li><li>• Ousterhout, J. (2021): A Philosophy of Software Design. 2nd ed., Stanford.</li><li>• Sedgewick, R./Wayne, K. (2011): Algorithms. Boston.</li></ul> |

## 4.5 IT Project Management (1.0109.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     | Duration                          |  | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------|--|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                   |  | FT                                            | PT |                        |      |
| 1.0109.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     | 1 semester                        |  | 6                                             | 8  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SWS | Synchronous contact time - online |  | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 200 h                 | 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5   | 14 h                              |  | 56 h                                          |    | 130 h                  |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                   |  |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>IT Project Management (1.0109.0.01) (5 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                                   |  |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to,</p> <ul style="list-style-type: none"><li>... systematically plan, manage and control IT projects, taking into account specific challenges in software and system development.</li><li>... Select and apply IT project management methods and tools to suit the situation.,</li><li>... Evaluate hybrid project management approaches and adapt them to specific IT project contexts.</li><li>... Analyze risks, stakeholders and resources in IT projects and derive suitable management strategies.</li><li>... to use communication and collaboration tools effectively for the management of IT projects.</li><li>... to integrate quality assurance and IT governance requirements into project management.</li><li>... to lead project teams and involve stakeholders effectively.</li></ul> |     |                                   |  |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Introduction to IT project management</li><li>Methods and process models</li><li>Planning and management of IT projects</li><li>Tools for IT project management</li><li>Risk management in IT projects</li><li>IT project controlling and quality assurance</li><li>Communication and stakeholder management</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                                   |  |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                               |     |                                   |  |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>It is recommended to have successfully completed the modules Programming I (1.0106.0.01) and Programming II (1.0108.0.01).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |                                   |  |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (120 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                   |  |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 120 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |                                   |  |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 8/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                                   |  |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                   |  |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Schwaber, K./Sutherland, J. (2020): The Scrum Guide. Scrum.org.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |                                   |  |                                               |    |                        |      |

**Further reading**

- Endress, T./Pussep, A./Nathmann, M. (2020): Digital Project Practice: Managing Innovation and Change. Ahrensburg.
- Phillips, J. (2010): IT Project Management: On Track from Start to Finish. 3rd ed., NewYork.
- Timminger, H. (2021): Modern project management in practice: A systematic approach to the right process model. Hoboken
- Wild, H. F./Flore, A. (2024): Expected benefits and use cases of AI in project management. In: Projekt-Management Aktuell; 2024, Vol. 35 Issue 5, p42-49.

## 5 Mathematics, Statistics and Research Methods

### 5.1 Business Mathematics (1.0006.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                   | FT                                            | PT |                        |      |
| 1.0006.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1 semester |                                   | 1                                             | 1  | every WS and SS        | M    |
| Total workload        | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4          | 14 h                              | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Business Mathematics (1.0006.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... apply methods of analysis to specific economic topics,</li><li>... determine and interpret economic parameters,</li><li>... systematically solve systems of linear equations using vector and matrix calculus,</li><li>... use suitable methods to solve problems of linear optimization, staggered production processes and inter-linking of services,</li><li>... classify basic financial mathematical concepts from textual contexts and</li><li>... apply financial mathematical methods appropriately in an economic context.</li></ul> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Analysis</li><li>Linear algebra</li><li>Exponential and logarithm function</li><li>Interest calculation</li><li>Pension calculation</li><li>Amortization calculation</li><li>Investment calculation</li><li>Total fixed-interest securities due</li><li>Approximate method for determining the effective interest rate</li><li>Regula falsi</li></ul>                                                                                                                                                                                                                                                                                   |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                       |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                   |                                               |    |                        |      |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>10</b> | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>• Lozano Gutierrez, M.; Ramón Llorens, M. (2017): Financial mathematics: fundamental concepts. Cartagena.</li><li>• Sydsaeter, K.; Hammond, P.; Strom, A.; Carvajal, A. (2021): Essential Mathematics for Economic Analysis. 6th ed. London.</li><li>• Swift, L.; Piff, S. (2014): Quantitative Methods for Business, Management and Finance. 4th ed. London.</li><li>• Salzman, S.; Clendenen, G. (2015): Business Mathematics, Global Edition. 13th ed. London.</li></ul> |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 5.2 Statistics (1.0007.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   | FT                                            | PT |                        |      |
| 1.0007.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1 semester |                                   | 1                                             | 2  | every WS and SS        | M    |
| Total workload        | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5          | 14 h                              | 56 h                                          |    | 55 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Statistics (1.0007.1.01) (5 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to,</p> <ul style="list-style-type: none"><li>... determine and create basic statistical indicators and graphics themselves,</li><li>... interpret basic statistical figures and graphs,</li><li>... calculate and interpret probabilities,</li><li>... use probability distribution models for statistical test procedures and to solve real problems and explain the result,</li><li>... Recognize the goals, benefits and limitations of statistical inference,</li><li>... select and apply suitable statistical methods and interpret the results, and</li><li>... solve statistical problems independently in writing.</li></ul> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>• Introduction and basic concepts</li><li>• One-dimensional data</li><li>• Concentration measures</li><li>• Relationship between two variables</li><li>• Probability calculation</li><li>• Probability distribution models</li><li>• Central limit theorem</li><li>• Statistical estimation and testing</li><li>• Non-parametric tests: chi-square goodness-of-fit test, chi-square independence test</li></ul>                                                                                                                                                                                                                                                                 |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                               |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>• Calderin-Ojeda, E., &amp; Déniz, E. G. (2022). Applied Statistics in Social Sciences. CRC Press, Taylor &amp; Francis Group.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                   |                                               |    |                        |      |

- Freund, R. J., & Wilson, W. J. (2003). Statistical Methods. Elsevier.
- Peren, F. W. (2022): Statistics for Business and Economics: Compendium of Essential Formulas, 2nd edition, Springer, Berlin/Heidelberg.
- Walker, I. (2017). Research Methods and Statistics. Bloomsbury Publishing.

**Further reading**

- Eid, M., Gollwitzer, M., Schmitt, M. (2017): Statistics and Research Methods, 5th ed.
- Field, A. (2017): Discovering Statistics using IBM STATISTICS, 5th ed./London.
- Field, A., Miles, J., & Field, Z. (2012). Discovering statistics using R. SAGE.
- Kushwaha, K. S. (2019). Practical Multivariate Statistics. New India Publishing Agency.
- Malec, M. (2018). Essential Statistics for Social Research: Second Edition. Routledge.

### 5.3 Scientific Work and AI (1.0110.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                   | FT                                            | PT |                        |      |
| 1.0110.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1 semester |                                   | 1                                             | 2  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 4          | 14 h                              | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Scientific Work and AI (1.0110.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to,</p> <ul style="list-style-type: none"><li>... to name and implement the quality criteria for academic work,</li><li>... research scientific literature efficiently, evaluate it critically and provide a well-founded assessment of the quality of the source,</li><li>... Use AI tools as a comparison for literature research and critically review generated results,</li><li>... to recognize differences in common citation styles and to cite literature sources correctly,</li><li>... Erkenntnisse aus wissenschaftlicher Literatur zusammenzufassen, zu reflektieren und zu diskutieren,</li><li>... to summarize, reflect on and discuss findings from scientific literature,</li><li>... to work out a scientific question specific to the course of study and to develop a stringent structure for a scientific paper based on this,</li><li>... independently prepare scientific content in the form of a scientific, literature-based paper in a comprehensible manner and in compliance with formal and time requirements,</li><li>... explain basic structures and procedures of the empirical research process,</li><li>... to present the state of research on a selected problem and identify gaps in research,</li><li>... to formulate operationalizable research questions and hypotheses from research gaps,</li><li>... select qualitative and quantitative analysis methods against the background of the research question,</li><li>... Perform AI-supported data processing and analyses competently</li></ul> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Fundamentals of science and scientific work</li><li>Principles of scientific theory</li><li>Scientific approach to literature</li><li>Choice of topic and research question</li><li>Structure of scientific papers</li><li>Scientific writing</li><li>Toolbox for scientific practice</li><li>AI in research</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Term paper</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                   |                                               |    |                        |      |
| 7                     | <b>Requirements for the awarding of ECTS credits</b> <p>Students complete this module with a term paper of 12 to 15 pages. Group work is possible. Further details are regulated by the examination regulations and guidelines of the examination office. A prerequisite for the award of ECTS points is a grade of at least 4.0 for the term paper.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |    |                        |      |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>8</b>  | <b>Importance of the grade for the final grade</b><br>The grade is included in the final grade with a proportion of 5/180 ECTS points.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>9</b>  | <b>Person responsible for the module</b><br>See study plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>10</b> | <b>Mandatory literature</b> <ul style="list-style-type: none"> <li>American Psychology Association (2020): Publication Manual of the American Psychology Association, 7th edition, APA, Washington, D.C.</li> <li>Baldwin, S. (2017). Writing Your Psychology Research Paper. APA, Washington D.C.</li> <li>Bell, E./Harles, B./Bryman, A. (2022). Business Research Methods, 6th edition, Oxford University Press, Oxford.</li> </ul> <b>Further reading</b> <ul style="list-style-type: none"> <li>Blair, L. (2016): Writing a Graduate Thesis or Dissertation, Brill, Rotterdam.</li> <li>Chang, M. (2014). Principles of Scientific Methods. Capman and Hall.</li> <li>Eden, L./Nielsen, B. B./Verbeke, A. (2020): Research Methods in International Business. Palgrave Macmillan.</li> <li>Goodwin, K. A./Goodwin, C. J. (2016). Research in Psychology: Methods and Design, 8th edition, Wiley.</li> <li>Oliver, P. (2014): Writing Your Thesis, 3rd edition, SAGE Publications, Los Angeles.</li> </ul> |

## 5.4 Advanced Mathematics (1.0111.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   | FT                                            | PT |                        |      |
| 1.0111.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1 semester |                                   | 3                                             | 3  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4          | 14 h                              | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Advanced Mathematics (1.0111.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes:</b> <p>This module builds on the modules Business Mathematics (1.0006.0.01) and Statistics (1.0007.0.01) and extends the mathematical methods specifically for applications in business informatics. While the Business Mathematics module teaches basic mathematical methods for economic issues and the Statistics module teaches the analysis and interpretation of data, this module focuses on mathematical concepts for modeling and optimization and decision-making in complex business informatics systems. After completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... linear and non-linear optimization methods and apply them to economic scenarios,</li><li>... understand and use integral and differential calculus for economic and operational applications,</li><li>... apply advanced analysis techniques to model and simulate economic processes.</li></ul> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Optimization and analysis for economic decision models</li><li>Stochastics, probability models and simulation</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                            |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>Knowledge of the Business Mathematics (1.0006.0.01) and Statistics (1.0007.0.01) modules is assumed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Bottazzi, G. (2023): Advanced Calculus for Economics and Finance, 1<sup>st</sup> ed., Springer Cham.</li><li>Steffen, B., Rüthing, O., Huth, M. (2018): Mathematical Foundations of Advanced Informatics: Volume 1: Inductive Approaches, 1<sup>st</sup> ed., Springer Cham.</li><li>Stevens, A. (2024). Monte-Carlo simulation: An introduction for Engineers and Scientists. CRC Press.</li><li><a href="https://nyu-cdsc.github.io/learningr/assets/kruschke_bayesian_in_R.pdf">https://nyu-cdsc.github.io/learningr/assets/kruschke_bayesian_in_R.pdf</a></li><li><a href="https://www.mjandrews.org/book/ddsr/">https://www.mjandrews.org/book/ddsr/</a></li></ul>                                                                                                                                                                                                                |            |                                   |                                               |    |                        |      |

## 6 Artificial Intelligence and Data Management

### 6.1 Introduction to Artificial Intelligence (1.0112.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                   | FT                                            | PT |                        |      |
| 1.0112.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1 semester |                                   | 1                                             | 1  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4          | 14 h                              | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Introduction to Artificial Intelligence (1.0112.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to,</p> <p>... to be able to assess the increasing importance of AI in economic and social areas.</p> <p>... understand and critically reflect on the basic concepts, methods and fields of application of artificial intelligence.</p> <p>... to assess the potential and risks of various AI applications.</p> <p>... Understand the basics of machine learning and deep learning.</p> <p>... practical AI applications for various problems (e.g. image processing, speech processing, automation).</p>                                                                                                 |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Definition and differentiation of AI and neural networks</li><li>History of AI and milestones in AI research</li><li>Areas of application of AI in business, medicine, industry, society, art and culture</li><li>Basics of machine learning and deep learning</li><li>Popular AI tools (e.g. ChatGPT, Dall E, Midjourney)</li><li>AI application and integration into operational processes</li><li>Constraint Satisfaction Problems (CSP)</li><li>Limits and possibilities of integrating AI into operational processes</li><li>Introduction to ethical and legal issues</li><li>Introduction to data protection-relevant aspects of AI</li></ul> |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                   |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                   |                                               |    |                        |      |

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| 10 | <p><b>Mandatory literature</b></p> <ul style="list-style-type: none"><li>• Russell, S.; Norvig, P. (2023): Artificial intelligence. 4th ed. London.</li></ul> <p><b>Further reading</b></p> <ul style="list-style-type: none"><li>• Godfellow, I., Bengio, Y., Courville, A. (2016): Deep Learning. Adaptive Computation and Machine Learning series. Cambridge.</li></ul> |
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## 6.2 Data Bases and Information Systems (1.0113.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   | FT                                            | PT |                        |      |
| 1.0113.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 semester |                                   | 2                                             | 3  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4          | 14 h                              | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Data Bases and Information Systems (1.0113.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to,</p> <p>... understand and explain the basic concepts of databases, including relational and non-relational data models.</p> <p>... Describe database management systems (DBMS) and their architecture and analyze their significance for companies and organizations.</p> <p>... Evaluate distributed and scalable database systems as well as data warehouses and data lakes and use them for big data applications.</p> <p>... Understand the basics of information and communication systems and analyze their role in companies and organizations.</p> <p>... to design and implement database applications and information systems in various application areas.</p> <p>... security and data protection aspects of databases and to implement suitable protective measures.</p> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Introduction to databases</li><li>Databases in practice</li><li>Overview of information and communication systems and their applications in practice</li><li>Security and data protection in databases</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                  |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Ramez E., Shamkant B. N. (2016): Fundamentals of Database Systems. 7th ed., London.</li><li>Laudon, K.; Laudon, J. (2021): Management Information Systems: Managing the Digital Firm, Global Edition: Managing the Digital Firm. London.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |    |                        |      |

### 6.3 Machine Learning (1.0114.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   | FT                                            | PT |                        |      |
| 1.0114.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1 semester |                                   | 2                                             | 5  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 4          | 14 h                              | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Machine Learning (1.0114.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>Students acquire an in-depth understanding of the concepts, algorithms and possible applications of machine learning. After successfully completing the module, they will be able to</p> <ul style="list-style-type: none"><li>... Understand and apply the basic principles and mathematical foundations of machine learning.</li><li>... explain different types of machine learning (supervised, unsupervised and reinforcement learning) and select suitable algorithms.</li><li>... to implement important machine learning models such as decision trees, random forests, support vector machines, neural networks and deep learning.</li><li>... to prepare, transform and optimize data for the training of models.</li><li>... to understand the importance of the artificial evolution of data and algorithms and of hierarchical clustering.</li><li>... Hyperparameter tuning and model validation techniques (e.g. cross-validation, grid search).</li><li>... Putting machine learning into practice with frameworks such as Scikit-Learn, TensorFlow and PyTorch.</li><li>... interpretability and explainability of machine learning models.</li><li>... Identify applications of machine learning in business informatics and AI and implement them in practice.</li><li>... analyze and evaluate ethical issues and data protection aspects in the use of machine learning.</li></ul> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Basics and delimitation</li><li>References to mathematical and statistical principles</li><li>Supervised learning</li><li>Unsupervised learning</li><li>Model training, optimization and evaluation</li><li>Ethical aspects and applications</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   |                                               |    |                        |      |

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| 10 | <p><b>Mandatory literature</b></p> <ul style="list-style-type: none"><li>• Goodfellow, I.; Bengio, Y.; Courville, A. (2016). <i>Deep learning</i>. MIT Press.</li><li>• Russell, S.; Norvig, P. (2023): Artificial intelligence. 4th ed. London.</li></ul> <p><b>Further reading</b></p> <ul style="list-style-type: none"><li>• Hastie, T., Tibshirani, R., &amp; Friedman, J. (2017). The Elements of Statistical Learning. Wiesbaden.</li><li>• Géron, A. (2022). Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow. Boston.</li><li>• Murphy, K. P. (2023). Probabilistic Machine Learning: An Introduction. Cambridge.</li><li>• Chollet, F. (2021). Deep Learning with Python. Manning Publications.</li><li>• Mavrogiorgos, K.; Kiourtis, A.; Mavrogiorgou, A. (2024): Bias in Machine Learning. A Literature Review. Applied Sciences, 1-40.</li></ul> |
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## 6.4 Big Data and Cloud Computing (1.0115.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     | Duration                          |  | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------|--|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                   |  | FT                                            | PT |                        |      |
| 1.0115.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     | 1 semester                        |  | 2                                             | 7  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SWS | Synchronous contact time - online |  | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 4   | 14 h                              |  | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                   |  |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Big Data and Cloud Computing (1.0115.0.01)Big Data and Cloud Computing (1.0115.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                                   |  |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to,</p> <ul style="list-style-type: none"><li>... explain the basic principles and characteristics of Big Data, including the 5Vs (Volume, Velocity, Variety, Veracity, Value) and their importance for business and research.</li><li>... understand different big data architectures and frameworks, analyze how they work and select suitable solutions for different use cases.</li><li>... to develop data management strategies for large and heterogeneous data volumes and to use suitable storage solutions.</li><li>... apply distributed data processing techniques to efficiently process and analyze large volumes of data.</li><li>... to understand the importance of data collection and its processing, evaluation and visualization.</li><li>... Understand the basics and architectures of cloud computing and compare different service models and deployment models.</li><li>... cloud platforms to develop and provide scalable, secure and cost-efficient applications.</li><li>... Implement big data analysis and machine learning methods in the cloud to support data-driven decisions.</li><li>... Evaluate security and data protection aspects in the area of big data and cloud computing, take regulatory requirements (e.g. GDPR) into account and implement appropriate protective measures.</li><li>... recognize future trends in big data and cloud computing and critically reflect on their impact on the economy and society.</li></ul> |     |                                   |  |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Introduction to Big Data</li><li>Big data technologies and platforms</li><li>Cloud computing basics</li><li>Cloud platforms and technologies</li><li>Data processing and analysis in the cloud</li><li>Security and data protection</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |                                   |  |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |  |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |                                   |  |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Case Study</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                   |  |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with a case study including a presentation. The minimum length of the case study is 10 pages, maximum 15 pages. The duration of the presentation, including discussion, is a minimum of 10 minutes and a maximum of 20 minutes.</p> <p>If specified by the lecturer, case studies can also be completed as group work. In this case, the following applies:</p> <ul style="list-style-type: none"><li>The performance of each student must be assessed individually.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |                                   |  |                                               |    |                        |      |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | <ul style="list-style-type: none"> <li>• The group size should not exceed 3 people.</li> <li>• Depending on the topic to be worked on, the length of the case study per person is a minimum of 5 and a maximum of 10 pages of text.</li> <li>• The individual performance of each student must be clearly distinguishable and marked by sections, page numbers or other criteria.</li> <li>• The individual performance of each student must also be clearly distinguishable in the presentation.</li> </ul> <p>A prerequisite for the award of ECTS points is a grade of at least 4.0 for the case study including the presentation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>8</b>  | <b>Importance of the grade for the final grade</b><br>The grade is included in the final grade with a proportion of 5/180 ECTS points.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>9</b>  | <b>Person responsible for the module</b><br>See study plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>10</b> | <b>Mandatory literature</b> <ul style="list-style-type: none"> <li>• Erl, T.; Monroy, B. (2023): Cloud Computing: Concepts, Technology, Security, and Architecture. New Jersey.</li> <li>• Kumar, J.; Kumar, A.; Kumar, R. (2024): Big Data and Analytics: The key concepts and practical applications of big data analytics. Delhi.</li> </ul> <b>Further reading</b> <ul style="list-style-type: none"> <li>• Marr, B. (2021): Data Strategy: How to Profit from a World of Big Data, Analytics and Artificial Intelligence. London.</li> <li>• Mazumder, S., Bhadoria, R. S., &amp; Deka, G. C. (2017). Distributed computing in big data analytics: Concepts, technologies and applications. Wiesbaden.</li> <li>• Mishra, V./Dubey, A.K./Bhushan, A. (2024): Mastering Cloud Computing. n.d.</li> <li>• Ruparelia, N. B. (2023): Cloud Computing, revised and updated edition. Cambridge.</li> <li>• Azadi, M.; Moghaddas, Z.; Cheng, T.C.E. (2023): Assessing the sustainability of cloud computing service providers for Industry 4.0: a state-of-the-art analytical approach. In: International Journal of Production Research. Vol. 61 Issue 12, pp4196-4213.</li> <li>• Mishra, V.; Dubey, A.K.; Bhushan, A. (2024): Mastering Cloud Computing.</li> <li>• Ruparelia, N. B. (2023): Cloud Computing, revised and updated edition (The MIT Press Essential Knowledge series). Cambridge</li> </ul> |

## 7 Legal-Normative Competencies

### 7.1 Civil and Labor Law (1.0010.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                   | FT                                            | PT |                        |      |
| 1.0010.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1 semester |                                   | 2                                             | 2  | every WS and SS        | M    |
| Total workload        | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4          | 14 h                              | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Civil and Labor Law (1.0010.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to,</p> <ul style="list-style-type: none"><li>... describe and explain the fundamental principles of private law;</li><li>... identify the different types of legal transactions;</li><li>... apply the fundamental principles of private law in order to conclude simple contracts in a legally correct manner;</li><li>... analyse key contractual obligations, identify breaches of duty, and derive practice-oriented solutions in co-operation with legal support;</li><li>... understand simple primary and secondary legal issues arising in legal case scenarios and develop possible solutions in cooperation with legal support;</li><li>... describe and explain the fundamental principles of employment law as a form of employee protection law and as a special branch of private law;</li><li>... differentiate and define the concept of an employee in comparison with other forms of employment or engagement;</li><li>... identify and discuss the main rights and obligations arising from the employment relationship, as well as the legal conditions under which employment may be terminated; and</li><li>... outline the basic principles of collective employment law.</li></ul> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Fundamentals of private law</li><li>Legal transaction theory</li><li>Legal sources of labor law and fundamentals</li><li>Employment contract law</li><li>Basics of procedural law</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                                   |                                               |    |                        |      |

|    |                                                                                                                                                                                                                                                                                                                                                                          |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9  | <b>Person responsible for the module</b><br>See study plan.                                                                                                                                                                                                                                                                                                              |
| 10 | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>• Lumney, M.; Nolan, D.; Oliphant, K. (2017): Tort Law: Text and Materials. 6th ed. Oxford.</li><li>• Walsh, D. (2023): Employment Law for Human Resource Practice. 7th ed. Nashville.</li><li>• Mann, R.; Roberts, B. (2019): Business Law and the Regulation of Business. 13th ed. Boston.</li></ul> |

## 7.2 Commercial and Corporate Law (1.0011.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   | FT                                            | PT |                        |      |
| 1.0011.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1 semester |                                   | 3                                             | 4  | every WS and SS        | M    |
| Total workload        | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3          | 14 h                              | 28 h                                          |    | 83 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Commercial and Corporate Law (1.0011.0.01) (3 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to,</p> <p>... explain the concept and meaning of the merchant and the trading company,</p> <p>... identify the special features of commercial legal transactions and</p> <p>... to differentiate and evaluate the various company forms with their special features.</p>                                                                                                                                                                                |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Merchant concept</li><li>Trading company</li><li>Commercial assistants</li><li>Commercial register</li><li>Special features of commercial transactions</li><li>Introduction to company law</li><li>Basics of the law of partnerships</li><li>Basics of the law of corporations</li><li>Position and liability of the GmbH managing director</li><li>Founding a start-up</li><li>Miscellaneous</li></ul>                                                                                           |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p> |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>It is recommended to have successfully completed the module Civil Law and Labor Law (1.0010.0.01).</p>                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                            |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Clarkson, K.; LeRoy Miller, R.; (2019): Business Law: Text and Cases. 15th ed. Boston.</li><li>Fox, D.; Munday, R.; Soyer, B.; Tettenborn, A.; Turner, P. (2020): Sealy and Hooley's Commercial Law: Text, Cases, and Materials. 6th ed. Oxford.</li><li>Brealey, R.; Myers, S.; Allen, F.; Edmans, A. (2022): Principles of Corporate Finance ISE. 14th ed. New York.</li></ul>                                                                                                            |            |                                   |                                               |    |                        |      |

### 7.3 Law for AI and Informatics (1.0116.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   | FT                                            | PT |                        |      |
| 1.01160.01            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1 semester |                                   | 5                                             | 6  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4          | 14 h                              | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Law for AI and Informatics (1.0116.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... identify and evaluate key legal issues in the context of artificial intelligence (AI) and computer science.</li><li>... understand the most important terms, functionalities and technical foundations of AI with regard to their legal relevance.</li><li>... analyze the copyright implications of AI-generated content and define the legal framework for the use of AI systems.</li><li>... recognize data protection requirements, especially when handling personal data in AI applications, and take them into account in system design.</li><li>... assess liability issues in connection with automated decision-making systems and AI systems and develop strategies to minimize risks.</li><li>... reflect on the patentability and protection of AI-based innovations in the context of intellectual property rights.</li><li>... understand and classify the legal requirements and content of the European AI Regulation (AI Act) and implement its implications for companies and developers.</li><li>... distinguish the most important legal issues in connection with the use of artificial intelligence in business practice.</li><li>... current legal regulations and provisions for business practice (e.g. EU AI Act / AI Regulation).</li><li>... to apply acquired knowledge using current legal case studies.</li><li>... to be trained in the essential areas of data protection law.</li><li>... assess legal problems and legal risks arising from AI application scenarios.</li></ul> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Introduction to the technical and legal basics</li><li>Copyright and intellectual property law</li><li>Data protection challenges</li><li>Liability aspects</li><li>Patentability and innovation protection</li><li>The European AI Regulation (AI Act)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                                   |                                               |    |                        |      |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>8</b>  | <b>Importance of the grade for the final grade</b><br>The grade is included in the final grade with a proportion of 5/180 ECTS points.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>9</b>  | <b>Person responsible for the module</b><br>See study plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>10</b> | <b>Mandatory literature</b> <ul style="list-style-type: none"> <li>Braegelmann, T. / Kaulartz, M. (Eds.). (2020). Legal Handbook Artificial Intelligence and Machine Learning. C.H. Beck.</li> </ul> <b>Further reading</b> <ul style="list-style-type: none"> <li>Borovick, H. (2024). AI and the Law: A practical guide to using artificial intelligence safely. Wiesbaden.</li> <li>Custers, B. / Fosch-Villaronga, E. (Eds.). (2022). Law and artificial intelligence: Regulating AI and applying AI in legal practice. T.M.C. Asser Press.</li> <li>Determann, L. / Paal, B. P. (2025). AI law international: Compliance Field Guide (1st ed.). Nomos.</li> </ul> |

## 7.4 Ethics in AI and Society (1.0117.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   | FT                                            | PT |                        |      |
| 1.0117.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1 semester |                                   | 6                                             | 7  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 4          | 14 h                              | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Ethics in AI and Society (1.0117.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successful completion of the module</p> <p>... students have a basic knowledge of definitions and terminology and are familiar with fundamental classical ethical theories and problems.</p> <p>... students understand the connections and conflicting goals of economic activity and ethics.</p> <p>... students are able to grasp the changing and expanding significance of business ethics challenges due to the increasing spread of AI applications.</p> <p>... can identify, describe and evaluate ethical positions in current social debates.</p> <p>... students apply the knowledge they have acquired on the basis of current socially relevant challenges arising from the penetration of AI into a wide range of social, societal and economic topics.</p> <p>... Students reflect on their own values and their understanding of ethics in a business context. They can relate their own values and ideas to the topics they have learned and defend their own points of view in discussions.</p> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Fundamentals of ethics and its central schools of thought</li><li>Business ethics and ethics-related issues in the digital age</li><li>Case studies from society and business in the context of intensifying AI diffusion, optional and alternating</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Presentation and handout</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with a presentation and a handout. The presentation has a length of 10 minutes, the accompanying handout has a length of 3 pages. Group work is possible. Further details are regulated by the examination regulations and guidelines of the examination office. A prerequisite for the award of ECTS points is a grade of at least 4.0 for the presentation and handout.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Hunt, S. D. / Vibrant Publishers. (2024): Macromarketing, ethics, and social responsibility: The development period (Legend in Marketing, Vol. 31). Vibrant Publishers.</li><li>Lutge, C. / Uhl, M. (2021). Business ethics: An economically informed perspective. Oxford University Press.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |    |                        |      |

- Velasquez, M. (2013). Business ethics: Concepts and cases (7th ed., Pearson New International Edition). Pearson.

**Further reading**

- Göllner, S. / Tropmann-Frick, M. (2023). Bridging the Gap between Theory and Practice: Towards Responsible AI Evaluation. Workshop at KI2023: 46th German Conference on Artificial Intelligence, September 26 - 29, 2023: Berlin, Germany.
- Greenwood, M. / Islam, G. (eds.). (n.d.). Journal of Business Ethics. Springer.

## 8 Interdisciplinary Competences

### 8.1 Business English and Intercultural Communication (1.0012.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   | FT                                            | PT |                        |      |
| 1.0012.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1 semester |                                   | 3                                             | 4  | every WS and SS        | M    |
| Total workload        | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4          | 14 h                              | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Business English and Intercultural Communication (1.0012.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... use the English language in a business context, both orally and in writing,</li><li>... apply the grammatical basics of the English language as well as the central technical terms of business English,</li><li>... use the vocabulary they have learned in a targeted manner when writing business correspondence, taking into account the target group to be addressed,</li><li>... systematically examine business correspondence and, based on the knowledge gained, assess different forms of correspondence with regard to business interests,</li><li>... conduct oral discussions and presentations in English and</li><li>... present their point of view in English in different business situations and point out problems.</li></ul> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Introduction to business communication</li><li>Written communication</li><li>Conversation management and techniques</li><li>Basics: Concept and techniques of presentation</li><li>Precise language application</li><li>Typical punctuation errors</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Presentation and handout</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with a presentation and a handout. The presentation has a length of 10 minutes, the accompanying handout has a length of 3 pages. Group work is possible. Further details are regulated by the examination regulations and guidelines of the examination office. A prerequisite for the award of ECTS points is a grade of at least 4.0 for the presentation and handout.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   |                                               |    |                        |      |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10 | <p><b>Mandatory literature</b></p> <ul style="list-style-type: none"> <li>• Locker, K./Mackiewicz, J./Aune, J.E./Kienzler, D. (2023): Business Communication, 13<sup>th</sup> edition, New York.</li> </ul> <p><b>Further reading</b></p> <ul style="list-style-type: none"> <li>• Allison, J./Emmerson, P. (2013): The Business 2.0. B1+ Intermediate, 2nd Ed./London.</li> <li>• Hart, C. (2018): Career Express. Business English B2, 2nd Ed./Berlin.</li> <li>• Bates, S. (2005): Speak Like a CEO. Secrets for Commanding Attention and Getting Results, New York.</li> <li>• Harvard Business School Press (2004): Presentations That Persuade and Motivate, Boston.</li> <li>• Hoff, R. (2003): Say It in Six. How to Say Exactly What You Mean in Six Minutes or Less, Kansas City.</li> <li>• Maier, S./Kourdi, J. (2011): The 100: Insights and lessons from 100 of the greatest speakers and speeches ever delivered, Singapore.</li> <li>• Powell, M. (2011): Dynamic Presentations, Cambridge.</li> <li>• Shannon, C. E./Weaver, W. (1998): The Mathematical Theory of Communication, Chicago.</li> <li>• Zelazny, G. (2007): Say It With Charts Complete Toolkit, New York.</li> </ul> <p><b>References to multimedia-supported teaching and learning programs</b></p> <ul style="list-style-type: none"> <li>• MyGrammarLab Online/app for Android Intermediate (Pearson): <a href="https://www.pearson.com/english/en/login-register/digital/my-grammar-lab.html">https://www.pearson.com/english/en/login-register/digital/my-grammar-lab.html</a>.</li> </ul> |
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## 9 Specialization in Business Administration

### 9.1 Agile Project Management (1.0014.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   | FT                                            | PT |                        |      |
| 1.0014.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1 semester |                                   | 2                                             | 4  | every WS and SS        | M    |
| Total workload        | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2          | 14 h                              | 14 h                                          |    | 97 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Agile Project Management (1.0014.0.01) (2 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... differentiate between the basic terms relating to projects and project management as well as the differences between classic and agile project management,</li><li>... Organize and implement projects in terms of both classic and agile project management and apply the relevant planning and control methods,</li><li>... also apply combined forms and thus hybrid approaches of classic and agile project management,</li><li>... assess which project management approach is suitable for which problem and project type, and</li><li>... present a specific course-related project to a group in a free and structured manner and apply rhetorical argumentation principles in a convincing manner.</li></ul> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Basics</li><li>Classic project management at a glance</li><li>Initiation and planning of projects</li><li>Implementation, management and completion of projects</li><li>Agile project management</li><li>Hybrid project management</li><li>Information technology support for project management</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Oral examination or written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an oral examination (individual or group examination possible as specified by the lecturer) or with a written examination. The duration of the oral examination must not be less than 15 minutes and should not exceed 45 minutes. The type of examination will be communicated to the students in the first week of lectures and is at the discretion of the teacher. A prerequisite for the award of ECTS points is a grade of at least 4.0 for the presentation with handout, oral examination or written examination.</p>                                                                                                                                                                                                                                                      |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |    |                        |      |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>10</b> | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>• PMI Project Management Institute (2017): Agile Practice Guide, 1st edition, Newton Square.</li><li>• Preußig, J. (2018): Agile project management. Scrum, Use Cases, Task Boards &amp; Co./2nd edition, Freiburg.</li><li>• PMI Project Management Institute (2021): A Guide to the Project Management Body of Knowledge, 7th Ed./Newton Square.</li></ul> |
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## 9.2 Introduction to ERP- and CRM-Systems (1.0118.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     | Duration                          | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                                   | FT                                            | PT |                        |      |
| 1.0118.01             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     | 1 semester                        | 4                                             | 4  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SWS | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4   | 14 h                              | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Introduction to ERP- and CRM-Systems (1.0118.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... Explain the basics of ERP and CRM systems and understand their business significance.</li><li>... identify leading ERP and CRM applications (e.g. SAP, Microsoft Dynamics, Salesforce, Hubspot).</li><li>... model typical business processes with ERP/CRM systems and recognize their optimization potential.</li><li>... configure a simple ERP/CRM system in a practical way and execute basic functions.</li><li>... analyze the influence of AI on modern ERP and CRM systems (e.g. chatbots, predictive analytics).</li></ul> |     |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Basics of ERP and CRM systems</li><li>ERP systems in detail</li><li>CRM systems in detail</li><li>AI in ERP &amp; CRM</li><li>Practical application</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                             |     |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                                   |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Heese, J. / Pacelli, J. (2025). Enterprise resource planning (ERP) system implementations and corporate misconduct. Accounting Review, 100(1), 291-315.</li><li>Kirchem, S. / Stadelmann, M. / Pufahl, M. (eds.). (2025). CRM goes digital: Design and use of digital customer interface in marketing, sales and service (Management for Professionals). Wiesbaden.</li></ul> <b>Further reading</b>                                                                                                                                                                                                                    |     |                                   |                                               |    |                        |      |

- Muphimin, M. / Rachbini, W. (2024). Analysis of the effect of customer relationship management, service quality and word of mouth on e-commerce customer loyalty through customer satisfaction as a mediator. *Dinasti International Journal of Economics, Finance & Accounting (DIJEFA)*, 5(3), 1449-1454.
- Oyindamola, I. / Fisher, M. (2023). CRM with Salesforce Hubspot and Motion AI: Chatbot-enabled CRM - An analysis of automated customer relationship management. *Iconic Research and Engineering Journals*, 7(5), 11-30.
- Pérez Estébanez, R. (2024). An approach to sustainable enterprise resource planning system implementation in small- and medium-sized enterprises. *Administrative Sciences*, 14(5), 1-12.
- Tavares, M. / Anastácio, I. / Leandro, A. (2024). Exploring the relationship between CRM tools, AI, and big data: A systematic review. *IGI Global*.
- Wahyuni, R. S. / Rachbini, W. (2024). The influence of customer relationship management and service quality on consumer loyalty through consumer satisfaction. *Dinasti International Journal of Economics, Finance & Accounting (DIJEFA)*, 5(3), 1501-1507.

### 9.3 Digital Marketing with AI (1.0119.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     | Duration                          | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                   | FT                                            | PT |                        |      |
| 1.0119.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     | 1 semester                        | 4                                             | 6  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SWS | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 4   | 14 h                              | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Digital Marketing with AI (1.0119.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... understand the basics of digital marketing and the use of AI-supported methods.</li><li>... apply important AI technologies in digital marketing (e.g. machine learning, NLP, predictive analytics).</li><li>... Interpret data analysis and customer behavior with AI-supported tools (e.g. Google AI, chatbots, recommendation systems).</li><li>... develop and optimize automated marketing processes with AI.</li><li>... data protection, ethics and legal aspects when using AI in marketing.</li></ul> |     |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Overview of operational marketing and the marketing mix</li><li>Digital technologies for the new</li><li>Product policy decisions</li><li>Communication policy decisions</li><li>Pricing policy decisions</li><li>Distribution policy decisions</li><li>User/consumer behavior</li><li>Ethics and legal framework</li></ul>                                                                                                                                                                                                                                                                              |     |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                        |     |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Presentation and handout.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with a presentation and a handout. The presentation has a length of 10–20 minutes, the handout has a length of 3 pages. Group work is possible. Further details are regulated by the examination regulations and guidelines of the examination office. A prerequisite for the award of ECTS points is a grade of at least 4.0 for the presentation and handout.</p>                                                                                                                                                                                                              |     |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                   |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Campbell, S. (2024). Digital marketing: Marketing revolution – Leveraging AI for competitive advantage.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                                   |                                               |    |                        |      |

- Red & Yellow Creative School of Business. (2022). EMarketing: The essential guide to marketing in a digital world (7. Aufl.).
- Ronteau, S. / Muzellec, L. / Saxena, D. (2023). Digital business models: The new value creation and capture mechanisms of the 21st century (1. Aufl.). Berlin.
- Ziakis, C. / Vlachopoulou, M. (2023). Artificial intelligence in digital marketing: Insights from a comprehensive review. Information, 14(12), 664.

**Further reading**

- Jatmika, R. T. D. / Ratnasari, V. / Nadlifatin, R. (2024). Empowering micro-entrepreneurs through artificial intelligence: A conceptual framework for AI-based marketing. Procedia Computer Science, 234, 1087-1094.
- Jin, S. V. / Viswanathan, V. (2025). Threatened and empty selves following AI-based virtual influencers: Comparison between followers and non-followers of virtual influencers in AI-driven digital marketing. AI & Society: Journal of Knowledge, Culture and Communication, 40(1), 117-131.
- Lammenett, E. (2021). Praxiswissen Online-Marketing: Affiliate-, Influencer-, Content-, Social-Media-, Amazon-, Voice-, Messenger- und E-Mail-Marketing (8th ed.). Wiesbaden.
- Red & Yellow Creative School of Business. (2022). EMarketing: The essential guide to marketing in a digital world (7th ed.).
- Ronteau, S. / Muzellec, L. / Saxena, D. (2023). Digital business models: The new value creation and capture mechanisms of the 21st century (1st ed.). Berlin.
- Ziakis, C. / Vlachopoulou, M. (2023). Artificial intelligence in digital marketing: Insights from a comprehensive review. Information, 14(12), 664.

## 9.4 Change Management and Digital Transformation (1.0120.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     | Duration                          |  | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------|--|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                                   |  | FT                                            | PT |                        |      |
| 1.0120.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     | 1 semester                        |  | 5                                             | 7  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SWS | Synchronous contact time - online |  | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4   | 14 h                              |  | 42 h                                          |    | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                                   |  |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Change Management and Digital Transformation (1.0120.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |  |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... understand the impact of digital transformation on companies and markets.</li><li>... develop strategies on how digital technologies can be successfully introduced in companies.</li><li>... Apply change management methods to shape change in companies.</li><li>... Recognize resistance to change and find solutions.</li><li>... assess management strategies and agile working methods in the digital transformation.</li><li>... understand the importance of artificial intelligence (AI) for business processes and decisions.</li></ul> |     |                                   |  |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Definitional basics of change management and digital transformation</li><li>The basics of digital transformation</li><li>Digital business models</li><li>Change management in the digital transformation</li><li>Leadership and corporate culture</li><li>Integration of AI in change processes</li><li>Communication and stakeholder management</li><li>Practical examples and case studies: Successful digital transformation projects and best practices</li></ul>                                                                                                                                                                        |     |                                   |  |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                            |     |                                   |  |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |                                   |  |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                                   |  |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                                   |  |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |                                   |  |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                                   |  |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Hess, T. (2022): Managing the Digital Transformation. A Guide to Successful Organizational Change, Springer, Wiesbaden.</li><li>Baalmans, B. / Broekhuizen, T. / Fabian, N. (2022). Digital transformation: A guide for managers. Groningen Digital Business Center.</li></ul>                                                                                                                                                                                                                                                                                                                                                         |     |                                   |  |                                               |    |                        |      |

**Further reading**

- Dörries, F. / Wichering, M. / Kersten, W. (2021). Evolving change management: Current challenges, success factors and adjustments for digital transformation. *Industry 4.0 Management*, 37(1), 50-54.
- Jagjit, S. / Alba, C. M. / Daqiang, G. (2023). Digital transformation of electronic patient information leaflets (ePIL): The case of multinational pharmaceutical manufacturers. *International Journal of Production Research*, 1-22. (Online First - add DOI if necessary)
- Kabashi, N. / Kabashi, S. / Kabashi, A. (2023). The importance of public and private change management in Kosovo enterprises. *Quality - Access to Success*, 24(197), 127-140.
- Mao, Y. (2025). Digital transformation of SMEs, action-oriented information disclosure, and enterprise value enhancement. (Further bibliographic information required - e.g. journal, publisher or DOI)
- Raelin, J. A. / Iszatt-White, M. / Carroll, B. / Crevan, E. K. (2025). Introductory article: Next generation of leadership-as-practice - Reconceptualizing change. *Journal of Change Management*, 25(1), 1-10.
- Santos de Souza, F. de O. / Chimenti, P. (2024). Emotions in organizational change: An integrative review. *Journal of Change Management*, 24(2), 137-176.

## 9.5 Business Simulation (1.0015.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Duration   |                                   | Semester of study                             |            | Frequency of the offer | Type |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|------------|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                   | FT                                            | PT         |                        |      |
| 1.0015.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1 semester |                                   | 5                                             | 7          | every WS and SS        | M    |
| Total workload        | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study | Self-study |                        |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3          | 14 h                              | 28 h                                          | 83 h       |                        |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                   |                                               |            |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Business Simulation (1.0015.0.01) (3 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                   |                                               |            |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to,</p> <ul style="list-style-type: none"><li>... to understand entrepreneurial performance as a decision-making and coordination process,</li><li>... Understand the impact chains and interrelationships of a company and take these into account when making decisions,</li><li>... evaluate and interpret business figures based on a holistic understanding of business decisions,</li><li>... develop and formulate corporate goals and strategies on the basis of evaluated business figures,</li><li>... Compare and analyze target and actual states,</li><li>... prepare management-based business decisions and</li><li>... organize themselves in a team and define decision-making structures.</li></ul> |            |                                   |                                               |            |                        |      |
| 3                     | <b>Contents</b> <ul style="list-style-type: none"><li>Planning, decision-making and results processing of at least 6 periods of a cloud-based business game</li><li>Introductory event, group division, discussion of the initial situation and introduction to the strategy options as well as introduction to the software/cloud</li><li>Presentation of management strategies and tools</li><li>Application of business management knowledge through the creation of strategies and analyses</li><li>Evaluation of the match results with indications of possible misconceptions and wrong decisions</li></ul>                                                                                                                                                                                                          |            |                                   |                                               |            |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                              |            |                                   |                                               |            |                        |      |
| 5                     | <b>Participation requirements</b> <p>It is recommended to have successfully completed the module Fundamentals of Business Administration (1.0002.0.01).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |            |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Project report</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                                   |                                               |            |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with a project report of 15-20 pages. Group work is possible. Further details can be found in the guidelines and examination regulations of the Examination Office. A prerequisite for the award of ECTS points is that the project report is graded with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                               |            |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                   |                                               |            |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                   |                                               |            |                        |      |

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| 10 | <p><b>Mandatory literature</b></p> <ul style="list-style-type: none"><li>• Manual of the respective business game.</li></ul> <p><b>Further reading</b></p> <ul style="list-style-type: none"><li>• Angwin, D./Cummings, S. (2017): The Strategy Pathfinder, 4th ed./Hoboken.</li><li>• Deresky, H. (2016): International Management. Managing Across Borders and Cultures, Text and Cases, Global Edition, 9th Ed./Harlow.</li><li>• Pillai, D./Gratien, J. (2022): Leadership: Its Role Within Small and Medium-sized Enterprises. In: Small Business Management and Control of the Uncertain External Environment, 2022, pp. 85-98.</li><li>• Grant, R. M. (2021): Contemporary Strategy Analysis, 11th ed./Hoboken.</li><li>• Luthans, F./Doh, J. (2020): International Management, 11th ed./New York.</li><li>• Wheelen, T./Hunger, J./Hoffman, A./Bamford, C. (2017): Strategic Management and Business Policy. Globalization, Innovation and Sustainability, 15th ed./London.</li></ul> |
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## 9.6 Innovation Management and Entrepreneurship (1.0027.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   | FT                                            | PT |                        |      |
| 1.0027.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1 semester |                                   | 6                                             | 8  | every WS and SS        | M    |
| Total workload        | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3          | 14 h                              | 28 h                                          |    | 83 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Innovation Management and Entrepreneurship (1.0027.0.01) (3 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... Explain and classify digital entrepreneurship in the context of digital management theories,</li><li>... Understand and apply the basics and principles of agile working methods,</li><li>... Use design thinking tools in the context of innovation management to generate new ideas,</li><li>... Conduct market research for a specific digital value proposition,</li><li>... develop a digital prototype independently and</li><li>... apply their acquired knowledge to current examples of best practice and discuss them in a reflective manner.</li></ul> |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Basics and special features of digital entrepreneurship</li><li>Innovation management and business models</li><li>Market research</li><li>Development of a prototype</li><li>Market launch</li><li>Best practice examples for market launch/product launch</li></ul>                                                                                                                                                                                                                                                                                                                                                                                        |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                           |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>It is recommended to have successfully completed the module Fundamentals of Business Administration (1.0002.0.01).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   |                                               |    |                        |      |

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|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10 | <p><b>Mandatory literature</b></p> <ul style="list-style-type: none"> <li>• Huff, Anne Sigismund, Kathrin M. Möslin, und Ralf Reichwald. 2013. Leading Open Innovation. Cambridge, Mass.: MIT Press.</li> <li>• Löhr, Karsten. 2016. The Science of Innovation. Berlin Boston: De Gruyter Oldenbourg.</li> <li>• Lyons, Andrew C., Adrian E. Coronado Mondragon, Frank Piller, und Raúl Poler. 2012. Customer-Driven Supply Chains: From Glass Pipelines to Open Innovation Networks. 2012. Aufl. London: Springer London.</li> <li>• Rangone, Adalberto. 2020. Managing Corporate Innovation: Determinants, Critical Issues and Success Factors. Cham, Switzerland: Springer.</li> <li>• Tseng, Mitchell M., und Frank T. Piller. 2003. The Customer Centric Enterprise: Advances in Mass Customization and Personalization. Berlin, Heidelberg: Springer Berlin Heidelberg.</li> </ul> <p><b>Further reading</b></p> <ul style="list-style-type: none"> <li>• Bessant, J. R., und Ina Goller. 2017. Creativity for innovation management. 1 Edition. New York: Routledge, Taylor &amp; Francis Group.</li> <li>• Christensen, C. (2016): The innovator's dilemma: When New Technologies Cause Great Firms to Fail, 3rd ed.</li> <li>• Curley, Martin, und Bror Salmelin. 2018. Open Innovation 2.0: The New Mode of Digital Innovation for Prosperity and Sustainability. Cham: Springer.</li> <li>• Dark Horse Innovation (2016): Digital Innovation Playbook, 7th ed.</li> </ul> |
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## 10 CEC: IT Security Management

### 10.1 Cyber Security (1.0122.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Duration   |                                   | Semester of study                             |       | Frequency of the offer | Type |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|-------|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   | FT                                            | PT    |                        |      |
| 1.0122.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1 semester |                                   | 4/5                                           | 5/6/7 | every WS and SS        | CEM  |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |       | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 4          | 14 h                              | 42 h                                          |       | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   |                                               |       |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Cyber Security (1.0122.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                   |                                               |       |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>Students acquire in-depth knowledge of cyber security, threat models and protective measures. After successfully completing the module, they will be able to,</p> <ul style="list-style-type: none"><li>... Understand and explain the basic concepts of cyber security, including threats, attacks and defense mechanisms.</li><li>... Analyze security architectures and technologies and develop suitable security measures for IT systems and networks.</li><li>... understand cryptographic processes such as encryption, digital signatures and hashing algorithms and apply them in practice.</li><li>... Identify security vulnerabilities in software systems and web applications and implement measures to secure them through secure coding and penetration testing.</li><li>... Compare and implement authentication and authorization methods, including multi-factor authentication (MFA) and identity access management (IAM).</li><li>... Understand and apply incident response strategies and forensic methods for analyzing cyber attacks.</li><li>... Identify risks in the area of cloud security and IoT security and develop measures to secure cloud environments and networked systems.</li><li>... Analyze future trends and current threat scenarios in the field of cyber security and develop innovative protection strategies.</li></ul> |            |                                   |                                               |       |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Introduction to cyber security</li><li>Cryptography and secure communication</li><li>Security in software and web applications</li><li>Identity and access management (IAM)</li><li>Cloud security and IoT security</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                   |                                               |       |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |       |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                                   |                                               |       |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |       |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |       |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                   |                                               |       |                        |      |

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|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9  | <b>Person responsible for the module</b><br>See study plan.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 10 | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>• Sharp, R. (2024): Introduction to Cybersecurity: A Multidisciplinary Challenge, 1<sup>st</sup> ed., Springer Nature.</li><li>• Cochran, K.A. (2024): Cybersecurity Essentials: Practical Tools for Today's Digital Defenders, 1<sup>st</sup> ed., Apress Berkeley.</li></ul> <b>Further reading</b> <ul style="list-style-type: none"><li>• Further recommended reading will be announced at the beginning of the course.</li></ul> |

## 10.2 Security Management and Compliance (1.0123.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Duration   |                                   | Semester of study                             |       | Frequency of the offer | Type |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|-------|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   | FT                                            | PT    |                        |      |
| 1.0123.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1 semester |                                   | 4/5                                           | 5/6/7 | every WS and SS        | CEM  |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |       | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 4          | 14 h                              | 42 h                                          |       | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |       |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Security Management and Compliance (1.0123.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                   |                                               |       |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to,</p> <ul style="list-style-type: none"><li>... Identify and evaluate security risks in companies and IT systems.</li><li>... develop IT security strategies and data protection measures in accordance with legal requirements.</li><li>... Analyze relevant legal and regulatory requirements (e.g. GDPR, IT Security Act) and integrate them into company processes</li><li>... evaluate and apply security management systems (ISMS) in accordance with international standards (e.g. ISO/IEC 27001).</li><li>... evaluate security incidents and derive suitable countermeasures.</li><li>... Develop corporate guidelines on compliance and sensitize employees to security aspects.</li></ul> |            |                                   |                                               |       |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Basics of safety management</li><li>Regulatory and legal framework conditions</li><li>IT risk management</li><li>Information security management systems (ISMS)</li><li>Compliance management</li><li>Security incidents and emergency management</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                   |                                               |       |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                               |            |                                   |                                               |       |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                                   |                                               |       |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Term paper</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |       |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with a term paper of 12 to 15 pages. Group work is possible. Further details are regulated by the examination regulations and guidelines of the examination office. A prerequisite for the award of ECTS points is a grade of at least 4.0 for the term paper.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |       |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                   |                                               |       |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |       |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Sharp, R. (2024): Introduction to Cybersecurity: A Multidisciplinary Challenge, 1<sup>st</sup> ed., Springer Nature.</li><li>Cochran, K.A. (2024): Cybersecurity Essentials: Practical Tools for Today's Digital Defenders, 1<sup>st</sup> ed., Apress Berkelley.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |       |                        |      |

- Von Faber, E. (2024): Managing IT Service Security: Methods and Recipes for User Organizations and Providers Along the Supply Chain, 1<sup>st</sup> ed., Springer Cham.

**Further reading**

- Further recommended reading will be announced at the beginning of the course.

### 10.3 Network Security (1.0124.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Duration   |                                   | Semester of study                             |       | Frequency of the offer | Type |
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|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                   | FT                                            | PT    |                        |      |
| 1.0124.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1 semester |                                   | 4/5                                           | 5/6/7 | every WS and SS        | CEM  |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |       | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2          | 14 h                              | 14 h                                          |       | 97 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                   |                                               |       |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>• Network Security (1.0124.0.01) (2 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |       |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>Students acquire in-depth knowledge in the field of network security and learn the concepts, technologies and methods for securing networks. After successfully completing the module, students will be able to,</p> <ul style="list-style-type: none"><li>... Understand and explain the basic principles of network security, including threats, attack techniques and defenses.</li><li>... design secure network architectures and analyze existing network infrastructures for security risks.</li><li>... understand and differentiate between various security protocols such as TLS, IPSec, SSH and VPN.</li><li>... recognize forms of attack such as man-in-the-middle (MitM), denial of service (DoS) and DNS spoofing and take appropriate protective measures.</li><li>... Firewalls, Intrusion Detection &amp; Prevention Systems (IDPS) and network analysis tools for attack detection and defense and apply them to different situations.</li><li>... Evaluate security mechanisms in wireless networks and identify vulnerabilities in WLANs (e.g. WPA3, WEP, WPA2).</li><li>... Implement methods for access control and authentication in the network, including NAC (Network Access Control) and Zero Trust models.</li><li>... implement secure network configurations and best practices for enterprises and cloud environments.</li><li>... assess the impact of modern network technologies such as Software-Defined Networking (SDN) and Network Function Virtualization (NFV) on network security.</li><li>... analyze current threats and attack trends in the area of network security and develop suitable response strategies.</li><li>... develop protection concepts for specific threat scenarios and critically reflect on their applicability.</li></ul> |            |                                   |                                               |       |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>• The basics of network security</li><li>• Security protocols and cryptography in the network</li><li>• Forms of attack and protective measures</li><li>• Network monitoring and intrusion detection</li><li>• Security in wireless networks</li><li>• Network access control and authentication</li><li>• Modern network technologies and security</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   |                                               |       |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                   |                                               |       |                        |      |
| 5                     | <b>Teilnahmevoraussetzungen</b> <p>Es werden keine Kenntnisse aus anderen Modulen vorausgesetzt.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   |                                               |       |                        |      |
| 6                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |       |                        |      |
| 7                     | <b>Form(s) of examination</b> <p>Presentation and handout</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                   |                                               |       |                        |      |

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|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>8</b>  | <b>Importance of the grade for the final grade</b><br>The grade is included in the final grade with a proportion of 5/180 ECTS points.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>9</b>  | <b>Person responsible for the module</b><br>See study plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>10</b> | <b>Mandatory literature</b> <ul style="list-style-type: none"> <li>Hoffmann, A. (2024): Web Application Security: Exploitation and Countermeasures for Modern Web Applications. Sebastopol/San Francisco.</li> <li>Moghaddam, F. F. (2025): The Art of Security: Safeguarding the Digital World. Frankfurt am Main.</li> <li>Stubbig, M. (2023): Practical OPNsense: Building Enterprise Firewalls with Open Source. Norderstedt.</li> </ul> <b>Further reading</b> <ul style="list-style-type: none"> <li>Bhavsingh, M. / Samunnisa, K. / Pannalal, B. (2023). A blockchain-based approach for securing network communications in IoT environments. International Journal of Computer Engineering in Research Trends, 10(10), 103-118.</li> <li>Brown, T. / Nakamura, H. (2022). 5G network security challenges and mitigation strategies. International Journal of Secure Communications, 15(2), 78-94.</li> <li>Kontsevoy, E. / Shah, S. / Conrad, P. (2023). Identity-Native Infrastructure Access Management: Preventing Breaches by Eliminating Secrets and Adopting Zero Trust. Sebastopol/San Francisco.</li> <li>Smith, J. / Patel, R. (2023). Advances in zero-trust architecture for modern network security. Journal of Cybersecurity Research, 12(1), 45-62.</li> <li>Zhang, Y. / Lee, K. (2024). AI-driven intrusion detection systems: Enhancing network security with machine learning. IEEE Transactions on Information Security, 20(3), 112-130.</li> </ul> |

## 11 CEC: AI und Robotics

### 11.1 Robotics and Autonomous Systems (1.0125.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Duration   |                                   | Semester of study                             |       | Frequency of the offer | Type |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|-------|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   | FT                                            | PT    |                        |      |
| 1.0125.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1 semester |                                   | 4/5                                           | 5/6/7 | every WS and SS        | CEM  |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |       | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 4          | 14 h                              | 42 h                                          |       | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |       |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Robotics and Autonomous Systems (1.0125.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                   |                                               |       |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... Understand the fundamentals of robotics and autonomous systems, including design, control and application.</li><li>... describe the main components of a robot (sensors, actuators, control system).</li><li>... understand and apply simple movement and navigation concepts.</li><li>... get to know basic algorithms for control and decision-making in autonomous systems.</li><li>... gain initial experience with a robotics programming environment (e.g. ROS or simple simulation software).</li></ul> |            |                                   |                                               |       |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Introduction to robotics and autonomous systems</li><li>Technical basics of robotics</li><li>Basics of movement and navigation</li><li>Robotics software and initial programming experience</li><li>Ethical and legal aspects</li></ul>                                                                                                                                                                                                                                                                                                                                                                  |            |                                   |                                               |       |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                        |            |                                   |                                               |       |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |       |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Term paper</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |       |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with a term paper of 12 to 15 pages. Group work is possible. Further details are regulated by the examination regulations and guidelines of the examination office. A prerequisite for the award of ECTS points is a grade of at least 4.0 for the term paper.</p>                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |       |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                   |                                               |       |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                   |                                               |       |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Bartneck, C. / Belpaeme, T. / Eyssel, F. (2024). Human-Robot Interaction: An Introduction. Cambridge University Press.</li><li>McComb, G. (2018). Robotics: Everything you need to know about robotics from beginner to expert. McGraw-Hill.</li></ul>                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |       |                        |      |

**Further reading**

- Craig, J. J. (2021). Introduction to robotics: Mechanics and control (4th ed.). Pearson.
- Kelly, A. (2013). Mobile robotics: Mathematics, models, and methods (1st ed.). Cambridge University Press.
- Levine, S. / Abbeel, P. / Krizhevsky, A. / Ibarz, J. / Quillen, D. (2019). Introduction to autonomous robots. Available at <https://autonomousrobots.org>
- Quigley, M. / Gerkey, B. / Smart, W. D. (2015). Programming robots with ROS (1st ed.). O'Reilly.
- Siciliano, B. / Khatib, O. (2016). Springer handbook of robotics (2nd ed.). Springer.
- Siegwart, R. / Nourbakhsh, I. R. / Scaramuzza, D. (2011). Introduction to autonomous mobile robots (2nd ed.). MIT Press.

## 11.2 Natural Language Processing (NLP) (1.0126.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Duration   |                                   | Semester of study                             |       | Frequency of the offer | Type |
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|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   | FT                                            | PT    |                        |      |
| 1.0126.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1 semester |                                   | 4/5                                           | 5/6/7 | every WS and SS        | CEM  |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |       | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 4          | 14 h                              | 42 h                                          |       | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |       |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Natural Language Processing (NLP) (1.0126.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                                   |                                               |       |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>Students acquire a sound understanding of the theoretical and practical fundamentals of Natural Language Processing (NLP). After successfully completing the module, they will be able to</p> <ul style="list-style-type: none"><li>... understand the basic principles and challenges of natural language processing.</li><li>... apply different NLP techniques (e.g. tokenization, stemming, lemmatization, part-of-speech tagging).</li><li>... Implement text representations such as Bag-of-Words, TF-IDF and Word Embeddings (Word2Vec, GloVe, FastText).</li><li>... Develop machine learning and deep learning models for NLP tasks (e.g. sentiment analysis, text classification, named entity recognition).</li><li>... Understand transformer models such as BERT, GPT and T5 and integrate them into applications.</li><li>... applications in the field of information retrieval, text generation and machine translation.</li><li>... Perform data cleansing and feature engineering for NLP projects.</li><li>... Perform model evaluations and optimizations for NLP models using appropriate metrics (e.g. BLEU, ROUGE, Perplexity).</li><li>... reflect on ethical issues, data protection and bias in NLP models.</li><li>... Realize practical NLP projects for business informatics and AI applications.</li></ul> |            |                                   |                                               |       |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Introduction to Natural Language Processing</li><li>Basic NLP techniques</li><li>Text representation and feature engineering and text analysis</li><li>Machine learning and deep learning for NLP</li><li>Applications of NLP</li><li>Model evaluation and optimization</li><li>Ethical aspects and bias in NLP</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   |                                               |       |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                   |                                               |       |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   |                                               |       |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                   |                                               |       |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                   |                                               |       |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                   |                                               |       |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |       |                        |      |

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|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>10</b> | <p><b>Mandatory literature</b></p> <ul style="list-style-type: none"> <li>• Alamar, J. / Grootendorst, M. (2024). Hands-On Large Language Models: Language Understanding and Generation. Sebastopol, California.</li> <li>• Rothman, D. (2024). Transformers for Natural Language Processing and Computer Vision: Explore Generative AI and Large Language Models with Hugging Face, ChatGPT, GPT-4V, and DALL-E 3 (3rd ed.). Packt Publishing.</li> <li>• Tunstall, L. / Werra, L. von / Wolf, T. (2022). Natural Language Processing with Transformers. Sebastopol, California.</li> </ul> <p><b>Further reading</b></p> <ul style="list-style-type: none"> <li>• Ding, Z. / Wei, R. / Xia, J. / Mu, Y. / Wang, J. / Lin, Y. (2025). Exploring the potential of large language model-based chatbots in challenges of ribosome profiling data analysis: A review. Briefings in Bioinformatics, 26(1), 1-13.</li> <li>• Oliveira, L. L. / Jiang, X. / Babu, A. N. / Karajagi, P. / Daneshkhah, A. (2024). Effective natural language processing algorithms for early alerts of gout flares from chief complaints. Forecasting, 6(1), 224-238.</li> <li>• Ragab, M. / Almuhammadi, A. / Mansour, R. F. / Kadry, S. (2024). Natural language processing with deep learning enabled hybrid content retrieval model for digital library management. Expert Systems, 41(6), 1-14.</li> <li>• Rothman, D. (2024): Transformers for Natural Language Processing and Computer Vision: Explore Generative AI and Large Language Models with Hugging Face, ChatGPT, GPT-4V, and DALL-E 3. Birmingham. UK.Chen, Y. / Huang, X. / Wu, Z. (2023). From natural language to accounting entries using a natural language processing method. Accounting &amp; Finance, 63(4), 3781-3795.</li> <li>• Wibowo, J. S. / Wahyudi, E. N. / Listiyono, H. (2024). Performance comparison of SVM, Naive Bayes, and Random Forest models in fake news classification. Engineering and Technology Journal, 9(8), 4799-4804.</li> </ul> |
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### 11.3 Human-Robot-Interaction (1.0127.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     | Duration                          |  | Semester of study                             |       | Frequency of the offer | Type |
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|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |                                   |  | FT                                            | PT    |                        |      |
| 1.0127.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     | 1 semester                        |  | 4/5                                           | 5/6/7 | every WS and SS        | CEM  |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SWS | Synchronous contact time - online |  | Asynchronous contact time - guided self-study |       | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2   | 14 h                              |  | 14 h                                          |       | 97 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |                                   |  |                                               |       |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Human-Robot-Interaction (1.0127.0.01) (2 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                   |  |                                               |       |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... Understand the theoretical and technological foundations of human-robot interaction (HRI) and analyze its influence on digital transformation in companies.</li><li>... evaluate human-robot interaction models and their application contexts (industry, medicine, smart homes, public spaces) and use them in a targeted manner.</li><li>... to capture psychological, cognitive and social aspects of the interaction between humans and autonomous systems and to use them for user-friendly design approaches.</li><li>... design adaptive, intuitive and multimodal interaction interfaces for robots and test their usability.</li><li>... Practical application of methods for controlling and communicating with robots (speech recognition, gesture control, tactile interaction).</li><li>... Using machine learning algorithms for adaptive robot systems and optimizing the reactions of robots based on sensor data.</li><li>... reflect on the importance of explainability, transparency and trustworthiness in the interaction with AI-supported robotic systems.</li><li>... evaluate ethical, legal and safety-related aspects of human-robot interaction and take them into account in business processes.</li><li>... apply usability principles and user experience (UX) for robot interfaces and develop user-friendly interaction models.</li></ul> |     |                                   |  |                                               |       |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Basics of human-robot interaction (MRI)</li><li>Interaction models and interface technologies</li><li>Cognitive, social and emotional aspects of MRI</li><li>Technical basics and implementation</li><li>Machine learning and AI in robotics</li><li>Usability and user experience for robots</li><li>Ethical, legal and safety-related aspects</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                   |  |                                               |       |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |                                   |  |                                               |       |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                   |  |                                               |       |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Presentation and handout</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |                                   |  |                                               |       |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with a presentation and a handout. The presentation has 10-20 minutes, the handout has a length of 3 pages. Group work is possible. Further details are regulated by the examination regulations and guidelines of the examination office. Prerequisite for ECTS points are awarded if the presentation with handout is graded with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                                   |  |                                               |       |                        |      |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>8</b>  | <b>Importance of the grade for the final grade</b><br>The grade is included in the final grade with a proportion of 5/180 ECTS points.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>9</b>  | <b>Person responsible for the module</b><br>See study plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>10</b> | <b>Mandatory literature</b> <ul style="list-style-type: none"> <li>• Bartneck, C. / Belpaeme, T. / Eysel, F. (2024). Human-Robot Interaction: An Introduction. Cambridge University Press.</li> <li>• Russell, S. / Norvig, P. (2020). Artificial Intelligence: A Modern Approach. Boston.</li> </ul> <b>Further reading</b> <ul style="list-style-type: none"> <li>• Goodrich, M. A. / Schultz, A. C. (2007). Human-robot interaction: A survey. Foundations and Trends in Human-Computer Interaction, 1(3), 203-275.</li> <li>• Sadiku, M. N. O. / Chukwu, U. C. / Ajayi-Majebi, A. / Musa, S. M. (2022). Human-robot interaction. International Journal of Trend in Scientific Research and Development, 6(4), 376.</li> <li>• Sharkawy, A.-N. (2021). Human-robot interaction: Applications. In Proceedings of the 1st IFSA Winter Conference on Automation, Robotics &amp; Communications for Industry 4.0 (ARCI' 2021), February 3-5, 2021, Chamonix-Mont-Blanc, France.</li> <li>• Song, C. S. / Kim, Y.-K. (2022). The role of the human-robot interaction in consumers' acceptance of humanoid retail service robots. Journal of Business Research, 146, 489-503.</li> <li>• Yadeta, D. D. / Bedane, A. B. / Chemma, W. D. (2023). Human-robot interaction: A state-of-the-art review. Journal of Artificial Intelligence, Machine Learning &amp; Data Science, 1(3), 109-118.</li> </ul> |

## 12 CEC: Digital Transformation

### 12.1 Digital Strategies and Business Models (1.0128.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Duration   |                                   | Semester of study                             |       | Frequency of the offer | Type |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|-------|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   | FT                                            | PT    |                        |      |
| 1.0128.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1 semester |                                   | 4/5                                           | 5/6/7 | every WS and SS        | CEM  |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |       | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 4          | 14 h                              | 42 h                                          |       | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |       |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Digital Strategies and Business Models (1.0128.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                   |                                               |       |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>Students acquire an in-depth understanding of the development, analysis and scaling of digital business models and strategies. After successfully completing the module, students will be able to,</p> <ul style="list-style-type: none"><li>... understand the basic principles of digital business models and analyze their relevance for companies.</li><li>... evaluate digital platform and ecosystem strategies and develop innovative business models for various industries.</li><li>... understand the principles of the shared economy and platform economy and analyze their success factors using examples such as Airbnb, Uber, Amazon and others.</li><li>... identify the impact of digitalization, artificial intelligence and automation on traditional business models and derive adaptation strategies.</li><li>... apply business model development methods such as Business Model Canvas, Lean Startup and Value Proposition Design.</li><li>... design scaling strategies for digital companies and explain the importance of network effects, data monetization and platform economics.</li><li>... evaluate new monetization strategies in the digital environment, including subscription models (premium models), pay-per-use and freemium models.</li><li>... understand the role of cloud computing, AI, blockchain and IoT as enablers of digital business models and plan their strategic use</li><li>... recognize disruptive innovations and technology trends and develop business strategies based on them.</li><li>... consider sustainability and ethical aspects in the digital economy and design sustainable digital business models.</li></ul> |            |                                   |                                               |       |                        |      |
| 3                     | <b>Study contents</b> <ul style="list-style-type: none"><li>Fundamentals of digital business models</li><li>Development, analysis and documentation of digital business models</li><li>Monetization and scaling strategies</li><li>Technological enablers of digital business models</li><li>Digital transformation and business strategy</li><li>Shared economy and platform economy</li><li>Future trends and sustainable digital business models</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |       |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                   |                                               |       |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                                   |                                               |       |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Homework.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                   |                                               |       |                        |      |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>7</b>  | <b>Prerequisites for the award of ECTS credits</b><br>Students complete this module with a term paper of 12 to 15 pages. Group work is possible. Further details are regulated by the examination regulations and guidelines of the examination office. A prerequisite for the award of ECTS points is a grade of at least 4.0 for the term paper.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>8</b>  | <b>Importance of the grade for the final grade</b><br>The grade is included in the final grade with a proportion of 5/180 ECTS points.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>9</b>  | <b>Person responsible for the module</b><br>See study plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>10</b> | <b>Mandatory literature</b> <ul style="list-style-type: none"> <li>• Botsman, R. (2010): What's mine is yours: The rise of collaborative consumption. New York, NY.</li> <li>• Gassmann, O. (2024): Collaborative Advantage: How Open Organizations Thrive in Volatility. Basingstoke.</li> <li>• Parker, G. G.; Van Alstyne, M. W.; Choudary, S. P. (2016): Platform revolution: How networked markets are transforming the economy - and how to make them work for you. Cambridge, MA.</li> <li>• Wirtz, B. W. (2023): Digital business models: Concepts, models, and the alphabet case study. Wiesbaden.</li> </ul> <b>Further reading</b> <ul style="list-style-type: none"> <li>• Halaburda, H. / Prince, J. / Sokol, D. D. (2023). The Business Revolution: Economy-Wide Impacts of Artificial Intelligence and Digital Platforms. Watertown, Massachusetts.</li> <li>• Kohli, R. / Melville, N. (2023). Digital transformation and business model innovation: Insights from case studies and emerging frameworks. MIS Quarterly, 47(1), 89-112.</li> <li>• Westergren, U. / Holmström, J. / Henriksen, H. Z. (2023). The impact of AI-driven business models on the digital economy: A critical review. Electronic Markets, 33(2), 210-230.</li> <li>• Zuboff, S. / Faraj, S. (2024). Surveillance capitalism and the role of digital platforms: A new business model perspective. Academy of Management Perspectives, 38(1), 15-32.</li> </ul> |

## 12.2 IT Strategy and Governance (1.0129.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     | Duration                          |  | Semester of study                             |       | Frequency of the offer | Type |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------|--|-----------------------------------------------|-------|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                                   |  | FT                                            | PT    |                        |      |
| 1.0129.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     | 1 semester                        |  | 4/5                                           | 5/6/7 | every WS and SS        | CEM  |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | SWS | Synchronous contact time - online |  | Asynchronous contact time - guided self-study |       | Self-study             |      |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4   | 14 h                              |  | 42 h                                          |       | 69 h                   |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                                   |  |                                               |       |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>IT Strategy and Governance (1.0129.0.01) (4 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                                   |  |                                               |       |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... Understand the role of IT strategy in the company and analyze its impact on business models.</li><li>... Develop IT strategies that are aligned with business objectives and technological trends.</li><li>... apply IT governance models (e.g. COBIT, ITIL) to control IT processes and ensure compliance.</li><li>... apply methods for analyzing, planning, implementing and monitoring IT strategies.</li><li>... strategically evaluate IT investments and efficiently plan IT budgets.</li><li>... successfully implement IT projects using agile methods and change management techniques.</li><li>... analyze IT risks and implement suitable security and control mechanisms.</li><li>... convincingly communicate IT strategies to stakeholders and collaborate across disciplines.</li><li>... continuously monitor and optimize IT strategies and adapt them to changing conditions.</li></ul> |     |                                   |  |                                               |       |                        |      |
| 3                     | <b>Study contents</b> <p>The module is divided into four central areas based on the basic strategic analysis:</p> <ul style="list-style-type: none"><li>Analysis (current status &amp; environment analysis)</li><li>Strategy (planning &amp; goal setting)</li><li>Tactics (implementation &amp; operationalization)</li><li>Control (monitoring &amp; optimization)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                                   |  |                                               |       |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |                                   |  |                                               |       |                        |      |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |                                   |  |                                               |       |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Written exam (75 minutes)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |                                   |  |                                               |       |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with an examination lasting 75 minutes. Prerequisite for the award of ECTS credits is the passing of the written exam with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |                                   |  |                                               |       |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                                   |  |                                               |       |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                                   |  |                                               |       |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Tricker, B. (2019): Corporate Governance: Principles, Policies and Practices. Vol. 4, Oxford.</li></ul> <b>Further reading</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |                                   |  |                                               |       |                        |      |

- Ammann, T. (2020). The Use of Artificial Intelligence in the Finance and Insurance Industry - Market Trend and Regulatory Challenges. *Computers and Law*, 36(10), 633-640.
- George, A. S. (2024). Escaping the vendor rabbit hole: Strategies for IT managers to balance external partnerships and internal priorities. *Partners Universal Multidisciplinary Research Journal (PUMRJ)*, 1(3), 66-86.
- Johanning, V. (2019). Step 5: IT organization and IT governance. In *IT strategy* (pp. 193-239). Springer Fachmedien Wiesbaden. <https://doi.org/10.1007/978-3-658-26490-1>
- Klotz, M. (2024). Standards: IT governance standardized - the new ISO/IEC 38500. *IT Governance*, 18(39), 19-24.
- Kohlleppe, L. / Sax, A. (2020). Business models, IT and governance. *Journal for the entire banking industry*, 73(23), 19-23.
- Safari, M. R. / Yu, L. Z. (2014). Assessment of IT governance and process maturity: Evidence from banking industry. *WHICEB 2014 Proceedings. AIS Electronic Library (AISeL)*.
- Seiner, R. (2025). Non-Invasive Data Governance Unleashed: Empowering People to Govern Data and AI. *Sedona*.
- Synak, T. / Götz, C. / Rebscher, S. (2023). AI governance as a prerequisite for value creation and compliance. *IT Governance*, 17(37), 3-9.

## 12.3 New Work (1.0130.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     | Duration                          |  | Semester of study                             |    | Frequency of the offer |  | Type            |  |     |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------|--|-----------------------------------------------|----|------------------------|--|-----------------|--|-----|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |  | FT                                            | PT |                        |  |                 |  |     |
| 1.0130.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     | 1 semester                        |  | 4/5                                           |    | 5/6/7                  |  | every WS and SS |  | CEM |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SWS | Synchronous contact time - online |  | Asynchronous contact time - guided self-study |    |                        |  | Self-study      |  |     |
| 125 h                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2   | 14 h                              |  | 14 h                                          |    |                        |  | 97 h            |  |     |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |  |                                               |    |                        |  |                 |  |     |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>New Work (1.0130.0.01) (2 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                                   |  |                                               |    |                        |  |                 |  |     |
| 2                     | <b>Intended learning outcomes</b> <p>After successfully completing the module, students will be able to</p> <ul style="list-style-type: none"><li>... to place processes of change in work in a historical context,</li><li>... assess the risks and opportunities of new forms of work,</li><li>... Understanding personnel development as the basis for human-system integration,</li><li>... to know the ideas and principles of innovation management,</li><li>... Understand strategic aspects of change and use methods such as digital tools in change processes,</li><li>... apply the acquired knowledge to practical problems of innovation management in the context of New Work.</li></ul> |     |                                   |  |                                               |    |                        |  |                 |  |     |
| 3                     | <b>Study contents</b> <p>Students learn about the various aspects of new forms of work and gain a holistic understanding of how they can be applied in practice.</p> <ul style="list-style-type: none"><li>Historical developments</li><li>Concepts and models</li><li>Innovation management</li><li>Working environments with AI</li><li>Human-system integration</li></ul>                                                                                                                                                                                                                                                                                                                           |     |                                   |  |                                               |    |                        |  |                 |  |     |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: Online lecture, discussion of case studies, use of interactive feedback opportunities.</p> <p>Asynchronous contact time: Learning videos, digital literature, learning tasks as individual or group assignments and guidance for literature study, as well as online-based self-learning tests to check your own learning progress.</p> <p>Self-study: Self-directed preparation and follow-up of courses and case studies, literature study and exam preparation.</p> <p>Teaching Language: English</p>                                                                                                                                          |     |                                   |  |                                               |    |                        |  |                 |  |     |
| 5                     | <b>Participation requirements</b> <p>No knowledge from other modules is required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                                   |  |                                               |    |                        |  |                 |  |     |
| 6                     | <b>Form(s) of examination</b> <p>Presentation and handout</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                                   |  |                                               |    |                        |  |                 |  |     |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with a presentation and a handout. The presentation has 10-20 minutes, the handout has a length of 3 pages. Group work is possible. Further details are regulated by the examination regulations and guidelines of the examination office. Prerequisite for ECTS points are awarded if the presentation with handout is graded with a module grade of at least 4.0.</p>                                                                                                                                                                                                                                            |     |                                   |  |                                               |    |                        |  |                 |  |     |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 5/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                   |  |                                               |    |                        |  |                 |  |     |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                   |  |                                               |    |                        |  |                 |  |     |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Gauer, S. (2024): Leadership in New Working Environments: Realizing the Potential of Flexible Workplace Concepts, 1<sup>st</sup> ed., Springer Cham.</li><li>Helmold, M. (2021): New Work, Transformational and Virtual Leadership: Lessons from COVID-19 and Other Crises, 1<sup>st</sup> ed., Springer Cham.</li></ul>                                                                                                                                                                                                                                                                                                             |     |                                   |  |                                               |    |                        |  |                 |  |     |

|  |                        |
|--|------------------------|
|  | <b>Further reading</b> |
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|  | <ul style="list-style-type: none"><li>• Further recommended reading will be announced at the beginning of the course.</li></ul> |
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## 13 Bachelor Examination

### 13.1 Bachelor's Thesis Business Informatics & AI (1.0121.0.01)

| Module number         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Duration   |                                   | Semester of study                             |    | Frequency of the offer | Type |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------|-----------------------------------------------|----|------------------------|------|
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   | FT                                            | PT |                        |      |
| 1.0121.0.01           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1 semester |                                   | 6                                             | 8  | every WS and SS        | M    |
| Total work-load       | ECTS points                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SWS        | Synchronous contact time - online | Asynchronous contact time - guided self-study |    | Self-study             |      |
| 300 h                 | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0          | 0 h                               | 0 h                                           |    | 300 h                  |      |
| Detailed information: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   |                                               |    |                        |      |
| 1                     | <b>Courses</b> <ul style="list-style-type: none"><li>Bachelor's Thesis Business Informatics &amp; AI (1.0121.0.01) (0 SWS)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                   |                                               |    |                        |      |
| 2                     | <b>Intended learning outcomes</b> <p>With the Bachelor's thesis, students demonstrate that they are able to independently work on a problem from the thematic area of the Business Informatics &amp; AI degree program using scientific methods within a specified period of time and present the results appropriately. This is a written examination paper.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                                   |                                               |    |                        |      |
| 3                     | <b>Study contents</b> <p>The students develop the topic of the Bachelor's thesis together with their supervisors. The topic can arise from a course but does not necessarily have to relate to it.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                   |                                               |    |                        |      |
| 4                     | <b>Teaching form(s)</b> <p>Synchronous contact time: none<br/>Asynchronous contact time: none<br/>Self-study: Independent preparation of the Bachelor thesis.<br/>Teaching language: English</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                                   |                                               |    |                        |      |
| 5                     | <b>Participation requirements</b> <p>Admission can only be granted if the applicant</p> <ol style="list-style-type: none"><li>is enrolled for the current semester and</li><li>is not undergoing a corresponding or comparable examination procedure and has not definitively failed a corresponding or comparable examination and</li><li>has successfully completed the module examinations and examinations required for admission and has earned a total of at least 134 ECTS credits at the time of application and is at least in the 6th semester (full-time studies) or 8th semester (part-time studies). The required ECTS points must be proven at the latest with the announcement of the results of the main examination date of the previous semester.</li></ol>                                                                           |            |                                   |                                               |    |                        |      |
| 6                     | <b>Form(s) of examination</b> <p>Bachelor thesis</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                   |                                               |    |                        |      |
| 7                     | <b>Prerequisites for the award of ECTS credits</b> <p>Students complete this module with the Bachelor's thesis. The processing time (period from the issue of the topic to the submission of the Bachelor's thesis) is 12 weeks for full-time students and 16 weeks for part-time students. The text part of the Bachelor's thesis must be between 35 and 40 pages in length or a maximum of 60 pages in the case of an empirical question. If the Bachelor's thesis is written as a group thesis, the text section is increased proportionately for each group member. Formatting requirements (font size, font, etc.) for the respective Bachelor's degree program can be found in the guidelines of the Examination Office. A prerequisite for the awarding of ECTS points is passing the Bachelor's thesis with a module grade of at least 4.0.</p> |            |                                   |                                               |    |                        |      |
| 8                     | <b>Importance of the grade for the final grade</b> <p>The grade is included in the final grade with a proportion of 12/180 ECTS points.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                   |                                               |    |                        |      |
| 9                     | <b>Person responsible for the module</b> <p>See study plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                   |                                               |    |                        |      |
| 10                    | <b>Mandatory literature</b> <ul style="list-style-type: none"><li>Gruba, P., Zobel, J. (2017): How to Write Your First Thesis, Springer International Publishing.</li><li>Oliver, P. (2014): Writing Your Thesis, 3<sup>rd</sup> ed., New York.</li></ul> <p>Basic literature for the preparation of scientific papers according to the curriculum for the module Scientific Work and AI (1.0110.0.01). If necessary, further binding literature and text passages will be determined at the beginning in consultation with the supervisors</p>                                                                                                                                                                                                                                                                                                         |            |                                   |                                               |    |                        |      |