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OTH Amberg-Weiden

Course Catalogue

Digital Technology and Management

Fakultät Wirtschaftsingenieurwesen und Gesundheit
Department of Industrial Engineering and Healthcare

Bachelor of Science (B.Sc.)

Table of contents

Preliminary Notes

- **Note:**

Please take special note of the Programme and Examination Regulations of this degree programme in their current version.

- **Study structure:**

The programme comprises a standard duration of 7 semesters.

- **Registration formalities:**

All examinations must be registered with the Students' Office through PRIMUSS.
Additional formalities are listed in the module descriptions.

- **Abbreviations:**

ECTS = The European Credit Transfer and Accumulation System (ECTS) is a credit point system for accreditation of course achievements.
SWS = Semesterwochenstunden = Semester hours per week
SPO = Studien- und Prüfungsordnung = Programme and Examination Regulations
APO = Allgemeine Prüfungsordnung = General Examination Regulations

- **Workload:**

According to the Bologna Process, a credit point is based on a workload of 25-30 hours. The number of hours includes contact and attendance time at the university, time spent preparing for and following up on courses, time spent writing papers and time spent preparing for examinations.

Example calculation of workload for a course with 4 SWS, 5 ECTS-points:

Workload: 5 ECTS x 30h/ECTS = 150 h

-	Lecture (4 SWS x 15 weeks)	= 60 h
-	Self-study	= 60 h
-	Exam preparation	= 30 h
		_____
		= 150 h

- **Accreditation of course achievements:**

Please observe all relevant application procedures via the Students' Office.

- **vhb:**

vhb (German: virtuelle Hochschule Bayern / English: virtual university Bavaria) is an online learning platform with online courses from different universities in Bavaria. Further information can be found here: https://www.vhb.org/en/

- **Dual study programme:**

The overall concept for the dual study programme throughout the entire course of study is described in the following table:

Winter Semester Start:

Supplementary overview of the dual study programme   OTH
                                                                          Amberg-Weiden

Specific modules for the dual Bachelor's programme - winter semester start		ECTS
1st semester		
Lecture-free period	Practical phase I	
2nd	Product Management	5
	Intercultural Communication	5
Lecture-free period	Practical phase II	
3rd semester	Marketing and Sales	5
	Project Management and Agile Methods	5
Lecture-free period	Practical phase III	
4th semester	Industrial Engineering	5
Lecture-free period	Practical semester	
5th semester	Practical semester	25
Lecture-free period	Practical phase IV	
6th semester	Practical Project (Specialization Elective)	5
Lecture-free period		
7th semester	Entrepreneurial Project 1: Developing a Digital Solution	5
	Entrepreneurial Project 2: Business Plan for a Digital Product	5
	Bachelor thesis	10
Total ECTS dual		**75**

Students in the third stage of their studies select suitable specialisation electives in consultation with the programme director, including, for example, the practical project.

Summer Semester Start:

Supplementary overview of the dual study programme   OTH
                                                                          Amberg-Weiden

Specific modules for the dual Bachelor's programme - summer semester start		ECTS
1st semester	Intercultural Communication	5
	Product Management	5
Lecture-free period	Practical phase I	
2nd semester	Fundamentals of Business Administration	5
Lecture-free period	Practical phase II	
3rd semester	Industrial Engineering	5
Lecture-free period	Practical phase III	
4th semester	Marketing and Sales	5
	Project Management and Agile Methods	5
Lecture-free period	Practical semester	
5th semester	Practical semester	25
Lecture-free period	Practical phase IV	
6th semester	Entrepreneurial Project 1: Developing a Digital Solution	5
	Entrepreneurial Project 2: Business Plan for a Digital Product	5
Lecture-free period		
7th semester	Bachelor thesis	10
Total ECTS dual		**75**

Curriculum

Course of study – winter semester start

relevant for students starting their studies in winter 2024/25 or later, or those who have **switched to the new SPO.**

No.	DTM - Study Plan - Winter Semester Start	Winter 1st Semester contact time (SWS)	ECTS	Summer 2nd Semester contact time (SWS)	ECTS	Winter 3rd Semester contact time (SWS)	ECTS	Summer 4th Semester contact time (SWS)	ECTS	Winter 5th Semester contact time (SWS)	ECTS	Summer 6th Semester contact time (SWS)	ECTS	Winter 7th Semester contact time (SWS)	ECTS	Total contact time (SWS)	ECTS	%
	Module groups / modules	Study Section 1				Study Section 2						Study Section 3						
1	Fundamentals of Mathematics, Informatics and Scientific Methods	4	5	4	5	4	5	8	10	4	5	0	0	0	0	24	30	14%
1.1	Mathematics	4	5															
1.2	Algorithms and Data Structures			4	5													
1.3	Object-oriented Coding					4	5											
1.4	Statistics and Quantitative Methods							4	5									
1.5	Information Systems and Databases							4	5									
1.6	Research and Evaluation Methods									4	5							
2	Digital Technology	4	5	4	5	8	10	4	5	0	0	0	0	4	5	24	30	14%
2.1	IoT Technology	4	5															
2.2	Product Management			4	5													
2.3	Sensors for Smart Systems					4	5											
2.4	Communication Technology							4	5									
2.5	Production Technology					4	5											
2.6	Innovation and Technology Lifecycle Management													4	5			
3	Management	8	10	4	5	4	5	0	0	0	0	4	5	0	0	20	25	12%
3.1	Fundamentals of Business Administration	4	5															
3.2	Principles of Accounting and Finance	4	5															
3.3	Business Processes Management			4	5													
3.4	Marketing and Sales					4	5											
3.5	Business Simulation											4	5					
4	Integrative Modules	0	0	0	0	4	5	8	10	0	0	8	10	8	10	28	35	17%
4.1	Project Management and Agile Methods					4	5											
4.2	Logistics 1							4	5									
4.3	Industrial Engineering							4	5									
4.4	Ethics in Business and Technology											4	5					
4.5	Entrepreneurial Project 1: Developing a Digital Solution													4	5			
4.6	Entrepreneurial Project 2: Business Plan for a Digital Product													4	5			
4.7	Research Project											4	5					
5	Language and Soft Skills	8	10	12	15	4	5	4	5	0	0	0	0	0	0	28	35	17%
5.1	English for Academic Purposes	4	5															
5.2	Technical English			4	5													
5.3	Intercultural Communication			4	5													
5.4	Basic Elective 1	4	5															
5.5	Basic Elective 2			4	5													
5.6	Basic Elective 3					4	5											
5.7	Basic Elective 4							4	5									
6	Specialization Modules	0	0	0	0	0	0	0	0	0	0	12	15	4	5	16	20	10%
6.1	Specialization Elective 1											4	5					
6.2	Specialization Elective 2											4	5					
6.3	Specialization Elective 3											4	5					
6.4	Specialization Elective 4													4	5			
7	Practical Phase										25					0	25	12%
7.1	Internship										25							
8	Bachelor's Degree														10	0	10	5%
8.1	Bachelor Thesis														10			
	Summe:	24	30	24	30	24	30	24	30	4	30	24	30	16	30	140	210	100%

Course of study – summer semester start

relevant for students starting their studies in summer 2025 or later, or those who have **switched to the new SPO.**

No.	Module groups / modules	Summer 1st Semester contact time (SWS)	ECTS	Winter 2nd Semester contact time (SWS)	ECTS	Summer 3rd Semester contact time (SWS)	ECTS	Winter 4th Semester contact time (SWS)	ECTS	Summer 5th Semester contact time (SWS)	ECTS	Winter 6th Semester contact time (SWS)	ECTS	Summer 7th Semester contact time (SWS)	ECTS	Total contact time (SWS)	ECTS	%
		Study Section 1				Study Section 2				Study Section 3								
1	Fundamentals of Mathematics, Informatics and Scientific Methods	4	5	4	5	8	10	4	5	0	0	4	5	0	0	24	30	14%
1.1	Mathematics			4	5													
1.2	Algorithms and Data Structures	4	5															
1.3	Object-oriented Coding							4	5									
1.4	Statistics and Quantitative Methods					4	5											
1.5	Information Systems and Databases					4	5											
1.6	Research and Evaluation Methods											4	5					
2	Digital Technology	4	5	4	5	4	5	8	10	0	0	4	5	0	0	24	30	14%
2.1	IIoT Technology			4	5													
2.2	Product Management	4	5															
2.3	Sensors for Smart Systems							4	5									
2.4	Communication Technology					4	5											
2.5	Production Technology							4	5									
2.6	Innovation and Technology Lifecycle Management											4	5					
3	Management	4	5	8	10	0	0	4	5	0	0	0	0	4	5	20	25	12%
3.1	Fundamentals of Business Administration			4	5													
3.2	Principles of Accounting and Finance			4	5													
3.3	Business Processes Management	4	5															
3.4	Marketing and Sales							4	5									
3.5	Business Simulation													4	5			
4	Integrative Modules	0	0	0	0	8	10	4	5	4	5	12	15	0	0	28	35	17%
4.1	Project Management and Agile Methods							4	5									
4.2	Logistics 1					4	5											
4.3	Industrial Engineering					4	5											
4.4	Ethics in Business and Technology									4	5							
4.5	Entrepreneurial Project 1: Developing a digital solution											4	5					
4.6	Entrepreneurial Project 2: Business Plan for a Digital Product											4	5					
4.7	Research Project											4	5					
5	Language and Soft Skills	12	15	8	10	4	5	4	5	0	0	0	0	0	0	28	35	17%
5.1	English for Academic Purposes			4	5													
5.2	Technical English	4	5															
5.3	Intercultural Communication	4	5															
5.4	Basic Elective 1	4	5															
5.5	Basic Elective 2			4	5													
5.6	Basic Elective 3					4	5											
5.7	Basic Elective 4							4	5									
6	Specialization Modules	0	0	0	0	0	0	0	0	0	0	4	5	12	15	16	20	10%
6.1	Specialization Elective 1											4	5					
6.2	Specialization Elective 2													4	5			
6.3	Specialization Elective 3													4	5			
6.4	Specialization Elective 4													4	5			
7	Practical Phase										25					0	25	12%
7.1	Internship										25							
8	Bachelor's Degree														10	0	10	5%
8.1	Bachelor Thesis														10			
	Total	24	30	24	30	24	30	24	30	4	30	24	30	16	30	140	210	100%

Course of study – DTM Double Degree

No.	DTM - Study Plan - Double Degree	ECTS	location	Winter 1st Semester contact time (SWS)	ECTS	Summer 2nd Semester contact time (SWS)	ECTS	Winter 3rd Semester contact time (SWS)	ECTS	Summer 4th Semester contact time (SWS)	ECTS	Winter 5th Semester contact time (SWS)	ECTS	Summer 6th Semester contact time (SWS)	ECTS	Winter 7th Semester contact time (SWS)	ECTS	Summer 8th Semester contact time (SWS)	ECTS	Total contact time (SWS)	ECTS	%
	Module groups / modules			Study Section 1				Practical Phase 1		Study Section 2				Practical Phase 2		Study Section 3						
1	**Fundamentals of Mathematics, Informatics and Scientific Methods**			**4**	**5**	**4**	**5**	**0**	**0**	**8**	**10**	**4**	**5**	**0**	**0**	**4**	**5**	**0**	**0**	**24**	**30**	**13%**
1.1	Mathematics	5	OTH	4	5																	
1.2	Algorithms and Data Structures	5	OTH			4	5															
1.3	Object-oriented Coding	5	WBU							4	5											
1.4	Statistics and Quantitative Methods	5	WBU							4	5											
1.5	Information Systems and Databases	5	WBU									4	5									
1.6	Research and Evaluation Methods	5	OTH or WBU													4	5					
2	**Digital Technology**			**4**	**5**	**4**	**5**	**0**	**0**	**8**	**10**	**4**	**5**	**0**	**0**	**0**	**0**	**4**	**5**	**24**	**30**	**13%**
2.1	IoT Technology	5	OTH	4	5																	
2.2	Product Management	5	OTH			4	5															
2.3	Sensors for Smart Systems	5	WBU							4	5											
2.4	Communication Technology	5	WBU							4	5											
2.5	Production Technology	5	WBU									4	5									
2.6	Innovation and Technology Lifecycle Management	5	OTH or WBU															4	5			
3	**Management**			**8**	**10**	**4**	**5**	**0**	**0**	**0**	**0**	**4**	**5**	**0**	**0**	**0**	**0**	**4**	**5**	**20**	**25**	**10%**
3.1	Fundamentals of Business Administration	5	OTH	4	5																	
3.2	Principles of Accounting and Finance	5	OTH	4	5																	
3.3	Business Processes Management	5	OTH			4	5															
3.4	Marketing and Sales	5	WBU									4	5									
3.5	Business Simulation	5	OTH or WBU															4	5			
4	**Integrative Modules**			**0**	**0**	**0**	**0**	**0**	**0**	**4**	**5**	**8**	**10**	**4**	**5**	**8**	**10**	**4**	**5**	**28**	**35**	**15%**
4.1	Project Management and Agile Methods	5	WBU							4	5											
4.2	Logistics 1	5	WBU									4	5									
4.3	Industrial Engineering	5	WBU									4	5									
4.4	Ethics in Business and Technology	5	OTH											4	5							
4.5	Entrepreneurial Proj. 1: Developing a Digital Solution	5	OTH or WBU													4	5					
4.6	Entrepreneurial Proj. 2: Business Plan for a Digital Product	5	OTH or WBU													4	5					
4.7	Research Project	5	OTH or WBU															4	5			
5	**Language and Soft Skills**			**8**	**10**	**12**	**15**	**0**	**0**	**4**	**5**	**4**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**28**	**35**	**15%**
5.1	English for Academic Purposes	5	OTH	4	5																	
5.2	Technical English	5	OTH			4	5															
5.3	Intercultural Communication	5	OTH			4	5															
5.4	Basic Elective 1	5	OTH	4	5																	
5.5	Basic Elective 2	5	OTH			4	5															
5.6	Basic Elective 3	5	WBU							4	5											
5.7	Basic Elective 4	5	WBU									4	5									
6	**Specialization Modules**			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**15**	**4**	**5**	**16**	**20**	**8%**
6.1	Specialization Elective 1	5	OTH or WBU													4	5					
6.2	Specialization Elective 2	5	OTH or WBU													4	5					
6.3	Specialization Elective 3	5	OTH or WBU													4	5					
6.4	Specialization Elective 4	5	OTH or WBU															4	5			
7	**Practical Phases**							**0**	**30**						**25**					**0**	**55**	**23%**
7.1	Internship 1	30	WBU						30													
7.2	Internship 2	25	OTH												25							
8	**Bachelor's Degree**																		**10**	**0**	**10**	**4%**
8.1	Bachelor Thesis	10	OTH or WBU																10			
8.2.	State Exam		WBU																			
	Total:	**240**		**24**	**30**	**24**	**30**	**0**	**30**	**24**	**30**	**24**	**30**	**4**	**30**	**24**	**30**	**16**	**30**	**140**	**240**	**100%**

Course of study – winter semester start (according to old* study and examination regulations)

No.	Module groups / modules	Summer 1st Semester contact time (SWS)	ECTS	Winter 2nd Semester contact time (SWS)	ECTS	Summer 3rd Semester contact time (SWS)	ECTS	Winter 4th Semester contact time (SWS)	ECTS	Summer 5th Semester contact time (SWS)	ECTS	Winter 6th Semester contact time (SWS)	ECTS	Summer 7th Semester contact time (SWS)	ECTS	Total contact time (SWS)	ECTS	%
	DTM - Study Plan - Summer Semester Start																	
		Study Section 1				Study Section 2				Study Section 3								
1	Fundamentals of Mathematics, Informatics and Scientific Methods	4	5	4	5	8	10	4	5	0	0	4	5	0	0	24	30	14%
1.1	Mathematics			4	5													
1.2	Algorithms and Data Structures	4	5															
1.3	Object-oriented Coding							4	5									
1.4	Statistics and Quantitative Methods					4	5											
1.5	Information Systems and Databases					4	5											
1.6	Research and Evaluation Methods											4	5					
2	Digital Technology	4	5	4	5	4	5	8	10	0	0	4	5	0	0	24	30	14%
2.1	IIoT Technology			4	5													
2.2	Product Management	4	5															
2.3	Sensors for Smart Systems							4	5									
2.4	Communication Technology					4	5											
2.5	Production Technology							4	5									
2.6	Innovation and Technology Lifecycle Management											4	5					
3	Management	4	5	8	10	0	0	4	5	0	0	0	0	4	5	20	25	12%
3.1	Fundamentals of Business Administration			4	5													
3.2	Principles of Accounting and Finance			4	5													
3.3	Business Processes Management	4	5															
SEM6	Digital Marketing and eCommerce							4	5									
3.5	Business Simulation													4	5			
4	Integrative Modules	0	0	0	0	8	10	4	5	4	5	12	15	0	0	28	35	17%
4.1	Project Management and Agile Methods							4	5									
4.2	Logistics 1					4	5											
4.3	Industrial Engineering					4	5											
4.4	Ethics in Business and Technology									4	5							
4.5	Entrepreneurial Project 1: Developing a digital solution											4	5					
4.6	Entrepreneurial Project 2: Business Plan for a Digital Product											4	5					
4.7	Research Project											4	5					
5	Language and Soft Skills	12	15	8	10	4	5	4	5	0	0	0	0	0	0	28	35	17%
5.1	English for Academic Purposes			4	5													
5.2	Technical English	4	5															
5.3	Intercultural Communication	4	5															
5.4	Basic Elective 1	4	5															
5.5	Basic Elective 2			4	5													
5.6	Basic Elective 3					4	5											
5.7	Basic Elective 4							4	5									
6	Specialization Modules	0	0	0	0	0	0	0	0	0	0	4	5	12	15	16	20	10%
6.1	Specialization Elective 1											4	5					
6.2	Specialization Elective 2													4	5			
6.3	Specialization Elective 3													4	5			
6.4	Specialization Elective 4													4	5			
7	Practical Phase										25					0	25	12%
7.1	Internship										25							
8	Bachelor's Degree														10	0	10	5%
8.1	Bachelor Thesis														10			
	Total	24	30	24	30	24	30	24	30	4	30	24	30	16	30	140	210	100%

*relevant only for students who have started their studies BEFORE winter 2024/25 and have NOT switched to the new SPO.

Course of study – summer semester start (according to old* study and examination regulations)

No.	Module groups / modules	Winter 1st Semester contact time (SWS)	ECTS	Summer 2nd Semester contact time (SWS)	ECTS	Winter 3rd Semester contact time (SWS)	ECTS	Summer 4th Semester contact time (SWS)	ECTS	Winter 5th Semester contact time (SWS)	ECTS	Summer 6th Semester contact time (SWS)	ECTS	Winter 7th Semester contact time (SWS)	ECTS	Total contact time (SWS)	ECTS	%
		Study Section 1				Study Section 2				Study Section 3								
1	Fundamentals of Mathematics, Informatics and Scientific Methods	4	5	4	5	4	5	8	10	4	5	0	0	0	0	24	30	14%
1.1	Mathematics	4	5															
1.2	Algorithms and Data Structures			4	5													
1.3	Object-oriented Coding					4	5											
1.4	Statistics and Quantitative Methods							4	5									
1.5	Information Systems and Databases							4	5									
1.6	Research and Evaluation Methods									4	5							
2	Digital Technology	4	5	4	5	8	10	4	5	0	0	0	0	4	5	24	30	14%
2.1	IoT Technology	4	5															
2.2	Product Management			4	5													
2.3	Sensors for Smart Systems					4	5											
2.4	Communication Technology							4	5									
2.5	Production Technology					4	5											
2.6	Innovation and Technology Lifecycle Management													4	5			
3	Management	8	10	4	5	4	5	0	0	0	0	4	5	0	0	20	25	12%
3.1	Fundamentals of Business Administration	4	5															
3.2	Principles of Accounting and Finance	4	5															
3.3	Business Processes Management			4	5													
SEM6	Digital Marketing and eCommerce					4	5											
3.5	Business Simulation											4	5					
4	Integrative Modules	0	0	0	0	4	5	8	10	0	0	8	10	8	10	28	35	17%
4.1	Project Management and Agile Methods					4	5											
4.2	Logistics 1							4	5									
4.3	Industrial Engineering							4	5									
4.4	Ethics in Business and Technology											4	5					
4.5	Entrepreneurial Project 1: Developing a Digital Solution													4	5			
4.6	Entrepreneurial Project 2: Business Plan for a Digital Product													4	5			
4.7	Research Project											4	5					
5	Language and Soft Skills	8	10	12	15	4	5	4	5	0	0	0	0	0	0	28	35	17%
5.1	English for Academic Purposes	4	5															
5.2	Technical English			4	5													
5.3	Intercultural Communication			4	5													
5.4	Basic Elective 1	4	5															
5.5	Basic Elective 2			4	5													
5.6	Basic Elective 3					4	5											
5.7	Basic Elective 4							4	5									
6	Specialization Modules	0	0	0	0	0	0	0	0	0	0	12	15	4	5	16	20	10%
6.1	Specialization Elective 1											4	5					
6.2	Specialization Elective 2											4	5					
6.3	Specialization Elective 3											4	5					
6.4	Specialization Elective 4													4	5			
7	Practical Phase												25			0	25	12%
7.1	Internship												25					
8	Bachelor's Degree														10	0	10	5%
8.1	Bachelor Thesis														10			
	Summe:	24	30	24	30	24	30	24	30	4	30	24	30	16	30	140	210	100%

*relevant only for students who have started their studies BEFORE winter 2024/25 and have NOT switched to the new SPO.

Module descriptions

Mandatory modules

1 Fundamentals of Mathematics, Informatics and Scientific Methods

Mathematics

Classification	Module ID	Kind of Module	ECTS
	1.1	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester	60

Module Convenor		Instructor	
Prof. Dr. Kambis Veschgini		Prof. Dr. Kambis Veschgini	

Prerequisites*

None

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Fundamentals of Mathematics, Informatics and Scientific Methods* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Seminar-based teaching with exercises.	Contact time: 60 h Self-study: 60 h Exam preparation = 30 h = 150 h

Description of Qualifications
Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:
- **Professional Skills:**
  - Students know and understand important mathematical tools for industrial engineers and can use them to analyse and solve mathematical problems and tasks in the areas mentioned in "Course content" (at the level of relevant literature for universities of applied sciences).
- **Methodological Skills:**
  - They understand mathematical models of technical and economic issues and can translate simple technical or economic problems into mathematical problems.
- **Personal Skills (Social Competence and Self-competence):**
  - They are able to independently acquire further mathematical knowledge and skills**.**

Course Content
The contents of this course are central to first-year-students in physics, chemistry, biology, computer science and all engineering sciences. It contents the following chapters
1. Fundamentals
2. Summation and Product Notation
3. Vector Analysis
4. Functions of one real variable
5. Differential Calculus
6. Integral Calculus

Literature
Available via Moodle

Internationality (content-related)
The course content is universally applicable.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form [1]	Scope/duration including weighting [2]	Learning Objectives/Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes.	The exam covers the above mentioned professional and methodological skills.

[1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Algorithms and Data Structures

Classification	Module ID	Kind of Module	ECTS
	1.2	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer Semester	60

Module Convenor	Instructor
Prof. Dr.-Ing. Manfred Beham	Prof. Dr.-Ing. Manfred Beham

Prerequisites*
None, this course is on beginner's level * Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Fundamentals of Mathematics, Informatics and Scientific Methods* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lecture with exercises; instruction seminars; practical work in programming	Contact time: 60 h Self-study: 60 h Exam preparation: 30 h Total effort: 150 h

Description of Qualifications
Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Professional Skills:
- Students can analyse existing algorithms concerning complexity.
- They can make use of elementary data-structures and predefined operations within their own software applications.
- Students will learn the elementary skills to implement basic algorithms in an object-oriented software development environment.

Methodological Skills:
- Students can use UML to create a static class model of elementary data-structures.
- Students will describe complexity of algorithms by a standard asymptotic notation.

Personal Skills (Social Competence and Self-competence):
- Students are also able to present solutions that have been created, to discuss their quality and alternatives and to reflect on their problem-solving strategy in a technical and methodical manner.

Course Content

Introduction: Algorithms, Analysing algorithms, Designing algorithms, Recursive procedures, Exemplary implementation (using JAVA)
Data structures: Elementary data structures, Hash tables, Binary trees, OO Modelling
Sorting and Order Statistics: Heapsort, Quicksort, Sorting in linear time
Graph Algorithms: Elementary search algorithms, Shortest path search, Selected game algorithms
Selected topics: Algorithms for parallel computers, Matrix operations, String matching, RSA public-key cryptosystem, …

Literature

Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest: **Introduction to Algorithms**, The MIT Press, Cambridge Massachusetts, London England, ISBN 0-262-53091-0 (MIT Press Paperback)

Internationality (content-related)

The content is valid in any international software development team

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1)]	Scope/duration including weighting [*2)]	Learning Objectives/Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes	With the exam and a possible bonus exercise, all of the above-mentioned competencies are tested.

[*1)] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2)] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Object-oriented Coding

Classification	Module ID	Kind of Module	ECTS
	1.3	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester	60

Module Convenor	Instructor
Prof. Dr.-Ing. Manfred Beham	Prof. Dr.-Ing. Manfred Beham

Prerequisites*

None

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Fundamentals of Mathematics, Informatics and Scientific Methods* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lecture; instruction seminars; practical exercise	Contact time: 60 h Self-study: 60 h Exam preparation: 30 h Total effort: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Professional Skills:
- Identify core aspects of object-oriented programming and features of an object-oriented language.
- Use a development environment for writing and running your code.
- Develop and implement programs that apply core object-oriented programming concepts like classes, polymorphism, and method overloading.
- Use built in data-structures (collections) and functions.
- Convert a given algorithm into a procedural program.

Methodological Skills:
- You are able to analyse and design an application using OO methods
- You can use step-by-step refinement to break down a problem into sub-problems (modularisation)

Personal Skills (Social Competence and Self-competence):
- You are also able to present solutions that have been created, to discuss their quality and alternatives and to reflect on their problem-solving strategy in a technical and methodical manner.

Course Content

This course provides an introduction to object-oriented programming, including an overview of the language syntax and how to develop simple applications. Students will learn how to write custom classes and methods, and how to test their code using unit testing and test-driven development. Topics include basic data structures like Arrays and Lists and concepts of inheritance or overloading methods.

Literature

- Depends on the concrete used programming language (JAVA, Python, C++, C#); will be specified in Moodle

Internationality (content-related)

The content is valid in any international software development environment

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1)]	Scope/duration including weighting [*2)]	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Project Work: An application for a given task must be developed, documented and presented. Written: Code and documentation (70 %) Orally: Presentation (30 %)	With this practical work, all of the above-mentioned competencies are tested.

[*1)] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2)] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Statistics and Quantitative Methods

Classification	Module ID	Kind of Module	ECTS
	1.4	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer Semester	60

Module Convenor	Instructor
Prof. Dr. Dr. Theresa Götz	Prof. Dr. Dr. Theresa Götz / Dr. Shrutika Sawant

Prerequisites*

None
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Fundamentals of Mathematics, Informatics and Scientific Methods* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lecture with exercise; practical exercise in computer lab	Contact time: 60 h Self-study: 60 h Exam preparation: 30 h Total effort: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- Students know and understand the possible applications of probability calculation to problems with random events and can apply them to these problems.
- Students know and understand the most important concepts and methods of descriptive and inductive statistics and can check the applicability of different methods for statistical problems.
- Students are able to select and apply suitable methods to solve statistical problems.
- Students can analyse univariate and bivariate statistical data with the methods of descriptive and inductive statistics
- Students are able to independently expand and deepen the acquired knowledge and competences.

Course Content

- Descriptive statistics: frequency distributions; graphical representations; measures (mean, variance, correlations)
- Basic probability theory
- Random variables and theoretical distributions
- Parameter estimation and confidence intervals
- Parametric and non-parametric test methods
- Regression analysis

Literature

Information about relevant textbooks and collection of formulas will be provided via Moodle.

Internationality (content-related)

The course content is internationally relevant and applicable.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Written Exam (KL90)	Written Exam, 90 minutes	The exam covers the above mentioned professional and methodological skills.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Information Systems and Databases

Classification	Module ID	Kind of Module	ECTS
	1.5	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer Semester	40

Module Convenor	Instructor
Prof. Dr. Thomas Geigenfeind	Prof. Dr. Thomas Geigenfeind

Prerequisites*

None
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Fundamentals of Mathematics, Informatics and Scientific Methods* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lecture; instruction seminars; practical exercise	Contact time: 60 h Self-study: 60 h Exam preparation: 30 h Total effort: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Professional Skills:
- You can design and implement a relational database.
- You can obtain information from relational databases with the help of elementary SQL queries.

Methodological Skills:
- You can analyse operational processes with object-oriented methods and document them using the UML notation.
- You can create an object-oriented concept for a simple, operational application system.
- You can transform a class-model into a relational schema.

Personal Skills (Social Competence and Self-competence):
- You have the ability to describe complex information structures with abstract models.
- You are familiar with the basics of process management for working in a team on an IT project.

Course Content

- Information systems within a company
- Business process analysis with OO methods for system analysis and system design
- Notation in UML
- Relational database systems and their application
- Development of a relational schema
- Basics of SQL-queries
- Exercises in designing and using an exemplary relational database

Literature

Michael Blaha: **UML Database Modeling Workbook**, Technics Publications, LLC (2. Februar 2014), ASIN: B00I82HHLC
Janis Osis, Uldis Donins: **Topological UML Modeling: An Improved Approach for Domain Modeling and Software Development**, Elsevier; 1. Edition (16. Juni 2017), ASIN: B07385XW26

Internationality (content-related)

The content is valid in any international IT design and development environment

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes	With the exam and a possible bonus exercise, all of the above-mentioned competencies are tested.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Research and Evaluation Methods

Classification	Module ID	Kind of Module	ECTS
	1.6	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester	60

Module Convenor	Instructor
Prof. Dr. Sebastian Buhl	Prof. Dr. Sebastian Buhl

Prerequisites*

None
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Fundamentals of Mathematics, Informatics and Scientific Methods* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lecture; instruction seminars; practical exercise	Contact time: 60 h Self-study: 60 h Module work preparation: 30 h Total effort: 150 h

Description of Qualifications
Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- Be an able and critical consumer of research
- Be able to create a formal statement and proposal of research addressing well-formed research questions
- Understand the process of research inquiry and apply it to an appropriate research design
- Gain a practical working knowledge of a variety of research methods and analytical techniques relevant to research
- Understand and evaluate the advantages and disadvantages of quantitative and qualitative research.
- Critically analyse and evaluate existing research reports and identify the intent of the research
- Effectively communicate research findings through oral, visual and written methods

Course Content

- Role of research and scientific basics
- Development of a scientific topic
- Applied research design process
- Critical evaluation of published research
- Objectivity, validity and reliability
- Quantitative and qualitative research strategies
- Questionnaire design
- Observation methods
- Content and Data analysis
- Scientific reading and writing
- Time Management in scientific research

Literature

Remler, D.K; (2015) Research Methods in Practice: Strategies for Description and Causation.
Franceschetti, D.; (2017) Principles of Scientific Research.
Voss, R. (2024) Wissenschaftliches Arbeiten.

Internationality (content-related)

Research is international and uniform international standards apply.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form *1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Module work (ModA)	*1. Development and creation of a scientific poster. Presentation of the poster in a poster exhibition. (50%) 2. Further development of a scientific topic and preparation of a presentation. Presentation and defense of the topic in a presentation round. (50%)*	The Form covers the above mentioned professional and methodological skills.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

2 Digital Technology

IoT Technology

Classification	Module ID	Kind of Module	ECTS
	2.1	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester	60, depending on computer room capacity

Module Convenor	Instructor
Prof. Dr. Kris Dalm	Prof. Dr. Kris Dalm

Prerequisites*

None
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Digital Technology* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lecture; field trip; practical exercise	Contact time: 60 h Self-study: 60 h Exam preparation: 30 h Total effort: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Professional skills:
- Basics of IoT technology (hardware, software, cloud)
- Programming of IoT devices using a development environment
- IoT cloud solutions
- IoT application development
- Embed, control and read sensors in IoT applications
- Visualization of IoT applications in suitable user interfaces

Methodological skills:
- Ability to program algorithms for IoT applications
- Ability to develop software projects in IoT environment
- Ability to implement sensors and actuators using libraries in IoT projects

Personal Skills (Social Competence and Self-competence):
Ability to develop IoT applications using IoT devices and cloud environments.

Course Content
- Introduction to IoT technology
- IoT software development
- Embedded systems/microcontroller including application development
- Cloud and IoT including application development

Literature
- Kernighan, Ritchie. C Programming Language, 2nd Edition. 2021.
- Lakhwani. Internet of Things (IoT): Principles, Paradigms and Applications of IoT. 2020
- Veneri, Capasso. Hands-On Industrial Internet of Things: Create a powerful Industrial IoT infrastructure using Industry 4.0. 2018.

Internationality (content-related)

IoT is an international phenomenon, IoT applications are developed and used worldwide.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/ Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes	With the exam, all of the above-mentioned competencies are tested.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Product Management

Classification	Module ID	Kind of Module	ECTS
	2.2	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer Semester	60

Module Convenor	Instructor
Prof. Burkhard Stolz	Tamer Güner

Prerequisites*
None

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Digital Technology* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lecture; class discussion; case studies; field trip; guest lecture	Contact time: 60 h Self-study: 60 h Module work preparation: 30 h Total effort: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Professional Skills:
- Students have knowledge of how product management fits into a modern, lean and agile corporate structure and are familiar with the interfaces to other areas and roles in the company.
- The students learn how to analyze and evaluate suitable markets for product launches. In addition, the students know possibilities for the collection of customer requirements in the area of requirements analysis.
- The students know possible product strategies and can apply them practically.
- The students know the gates and phases of the product development cycle from the product manager's point of view and know his task and influence in the entire product life cycle.

Methodological Skills: Students learn methods...
- for idea generation and evaluation for new products.
- for market analysis and generation of a product launch strategy.
- for identifying, structuring and prioritizing customer requirements.
- and know its role and influence throughout the product life cycle.

Personal Skills (Social Competence and Self-competence):
- Team-oriented processing of examples and case studies in the field of product management.
- Communication and presentation of results from individual and group work.

Dual students:
Thanks to the practical experience they have already gained in the dual company and the skills they have already acquired, dual students are in a better position to work through the course content.
Projects from dual partner companies are worked on by their dual students. Non-dual students may participate in these projects if the number of participants allows.

Course Content
- Definition of the role of product management with its tasks and objectives.
- Integration of product management into different product development models and its interfaces to other roles and areas in the company.
- Requirements and market analysis and ways to generate new product ideas.
- Product portfolio management
- Development and derivation of an appropriate product development strategy and product roadmap.
- Influence in the product marketing mix and establishment of marketing strategies.
- Participation and influence in the product development process and product life cycle.
- Product launch opportunities and subsequent control.
- Digital business transformation and its influence on product management.
- Different characteristics and lifestyles of product management in the enterprise: Startup vs. SME vs. corporation.

Adapted content for dual students:
- Taking on project management tasks as part of a process project
- Working on primarily strategic tasks in which dual students can contribute their knowledge and skills.

Literature
- Gorchels L.: Product Manager's Handbook - The Complete Product Management Resource, second edition; The McGraw-Hill Companies; 2000.
- Steinhardt G.: The Product Manager's Toolkit®; Springer, 2017.
- Anon J. und Villaumbrosia C. G.: The Product Book; Product School, 2017.
- Nandakumar M.: Lean Product Management - Successful products from fuzzy business ideas; Packt Publishing, Limited, 2018.
- Ellis G.: Project Management in Product Development; Elsevier, 2106.
- Barkley B. T.: Project Management In New Product Development; The McGraw-Hill Companies, 2008.
- Martinelli R. J. and Milosevic D. Z.: Project Management Toolbox 2nd Edition; Wiley, 2016.
- Herrmann A. und Huber F.: Produktmanagement Grundlagen – Methoden – Beispiele, 3., vollständig überarbeitete und erweiterte Auflage; Springer, 2013.

Internationality (content-related)
Product Management usually comprises the development and management of products for and in international markets, including e.g. technical and managerial issues in international contexts

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)		
Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Module work (ModA)	Group project with individual presentations: Elaboration of a topic/case study	The group project is used to test the practical learning content and competence profiles, including teamwork and presentation skills.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Sensors for Smart Systems

Classification	Module ID	Kind of Module	ECTS
	2.3	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester	60

Module Convenor		Instructor	
Prof. Dr. Kris Dalm		Arno Erzberger	

Prerequisites*

None

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Digital Technology* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lecture; case studies; practical exercise; demonstration	Contact time: 60 h Self-study: 60 h Exam preparation: 30 h Total effort: 150 h

Description of Qualifications
Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Professional skills and competencies:
-   know structure and basic elements of sensors
-   know physical sensor principles
-   know physical signal transmission
-   evaluate performance and accuracy of sensors
-   evaluate sensor specifications
-   know costs and prices of sensor solutions
-   know sensor system interfaces (electrical and mechanical)
-   evaluate sensor system integration
-   know and evaluate disturbances variables and the related system impact.

Methodological skills and competencies:
-   decide if a sensor is necessary in the system or not
-   decide what kind of sensors are necessary in the system
-   cost-benefit consideration in sensor selection and design
-   question and evaluate sensor specifications, requirements and performance

Personal skills and competencies:
systematically and competently communicating commercial and technical sensor requirements with product developers and sensor suppliers.

Course Content

This module provides students with a comprehensive overview of the broad field of sensors for smart systems in the lecture, covering functional principles, signal processing, interfaces and applications. The various sensors are presented systematically. Basic concepts for sensing requirements and performance are presented, and costs and prices for sensor deployment are evaluated. In addition to the technical/physical understanding and resulting costs, the ability to communicate professionally with both sensor/system developers and sensor suppliers is provided. A detailed practical example with live-demonstration of a technical/commercial sensor design is developed, evaluated and alternative solutions are considered. Solutions for various sensor tasks are worked out and presented by individual student groups.

Literature

Jacob, Fraden, "Handbook of Modern Sensors", Springer Verlag
Olfa, Kanoun, Nabil, Derbel, Faouzi, Derbel "Sensors, Circuits & Instrumentation Systems", De Gruyter

Internationality (content-related)

The course content is internationally and universally relevant and applicable.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[1]	Scope/duration including weighting [2]	Learning Objectives/Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes	With the exam and a possible bonus exercise, all of the above-mentioned competencies are tested.

[1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Communication Technology

Classification	Module ID	Kind of Module	ECTS
	2.4	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer Semester	60

Module Convenor	Instructor
Prof. Dr. Kris Dalm	Prof. Dr. Kris Dalm

Prerequisites*
None; * Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Digital Technology* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lecture; case studies; practical exercise; demonstration; laboratories digital and real	Contact time: 60 h Self-study: 60 h Exam preparation: 30 h Total effort: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Students will be able to describe the components and functions of communications technologies required for IoT and industrial communication.

Professional skills:
- Basics of communication technology
- Communication in Smart Factories and Industry 4.0 environments
- Knowing relevant parameters of wired and wireless communication technologies
- Usage and application of communication technologies
- Automation basics and digital technology
- Condition monitoring using communication technologies

Methodological skills:
- Ability to develop automation applications
- Being familiar with OSI and TCP/IP models
- Knowing automation pyramid

Personal Skills (Social Competence and Self-competence):

Ability to understand communication technologies and implementation in personal and industrial environments.

Course Content

- Introduction to communication technology
- Industry 4.0 and automation
- PLC
- Automation development and communication basics
- Basic communication technologies
- Network technologies
- Industrial and mobile communication technologies

Literature

- Karaali. Grundlagen der Steuerungstechnik: Einführung mit Übungen. 2018.
- Tapken. SPS Theorie und Praxis: mit Übungsaufgaben und Programmier- und Simulationssoftware. 2020.
- Bök, Noack, Müller, Behnke. Computernetze und Internet of Things. 2020.
- Sadiku, Akujuobi. Fundamentals of Computer Networks. 2022.
- Sauter. Grundkurs Mobile Kommunikationssysteme. 2018.

Internationality (content-related)

The course content is internationally and universally relevant and applicable.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/ Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes	With the exam, all of the above-mentioned competencies are tested.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Production Technology

Classification	Module ID	Kind of Module	ECTS
	2.5	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester	60

Module Convenor	Instructor
Prof. Andreas Dörner	Prof. Andreas Dörner

Prerequisites*

None
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Digital Technology* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lecture; case studies; practical exercise; demonstration	Contact time: 60 h Self-study: 60 h Exam preparation: 30 h Total effort: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- **Professional Skills:**
  - o Based on a broad and integrated knowledge of various manufacturing processes and current trends like Industry 4.0, students will be able to evaluate suitable alternative manufacturing processes for production. In doing so, students know how to take into account quality, economic efficiency and flexibility as well as the economical use of resources.
  - o students are able to plan suitable manufacturing processes for products and their components using the manufacturing technologies and related information systems (e.g., MES, ERP, PLM) as well as analytical approaches.
- **Methodological Skills:**
  - o students can review and evaluate manufacturing processes using in-depth subject-oriented methodological knowledge. This includes, for example, the evaluation of occurring process forces or predicting tool life.
- **Personal Skills (Social Competence and Self-competence):**
  - o students are able to work in a team of experts on questions of production technology in a responsible manner and to solve complex subject-related problems in a team.

Course Content

- Fundamentals of Production Management
- Organisation Forms in industrial Production
- Fundamentals of Production Technology
- Conventional Manufacturing Methods
- Additive Manufacturing
- Assembly Technologies
- Information systems for production (MES, ERP, PLM, APS)
- Analytics & Maintenance Approaches for Factories

Literature

Scripts, exercises, review questions, additional media (photo, video, ...)
- Gibson, Rosen and Stucker (2015): Additive Manufacturing Technologies. Springer. Available under: ISBN 978-1-4939-2112-6
- Nassehi (2018): Operations Management, in: The International Academy for Production Engineering et al. CIRP Encyclopaedia of Production Engineering. Available under: DOI 10.1007/978-3-642-35950-7_16746-1

Internationality (content-related)

The course content is internationally and universally relevant and applicable.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[1]	Scope/duration including weighting [2]	Learning Objectives/ Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes Bonus system: There is the possibility of grade improvement (German: "Notenverbesserung") through voluntary performances during the course. By preparing a presentation of short relevant topics or tasks given during the lecture, a bonus of max. 10 % of the total number of points attainable in the written examination can be added in the same semester to the points actually attained in the written examination. The grade calculation then refers to the total points, whereby more than a grade of 1.0 cannot be achieved. The bonus points apply only in the semester in which they are earned. The offer exists only in semesters in which a course is offered by the lecturer. There is no individual entitlement for students for an offer of such a bonus ((German: "Notenverbesserung") by the lecturer.	With the exam and a possible bonus exercise, all of the above-mentioned competencies are tested.

[1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

[2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Innovation and Technology Lifecycle Management

Classification	Module ID	Kind of Module	ECTS
	2.6	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester Students who need to take the module in Winter 2025/26 are requested to urgently contact the head of the study programme as the module will not be offered as a regular lecture	60

Module Convenor	Instructor
Prof. Burkhard Stolz	The module will be taught as part of the Ukrainian-German Teaching Week within the DILLUGIS projects. Details will be available via this link https://www.oth-aw.de/en/studies/study-offers/study-programmes/bachelor/digital-technology-management/dillugis-project/

Prerequisites*

None. Students who need to take the module in Winter 2025/26 are requested to urgently contact the head of the study programme as the module will not be offered as a regular lecture

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Digital Technology* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lecture; case studies; practical exercise; demonstration in computer lab	Contact time: 60 h Self-study: 60 h Exam prepa.ration: 30 h Total effort: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:
- Presentation and knowledge of the basic theories.
- Application of the corresponding instruments of technology and innovation management in an international context
- They can support an innovation project in the areas of planning, organising, managing and processing
- They are able to define the goals of a development project and use the right methods to achieve these goals
- They reflect their actions, being aware of the social, economic, ecological and ethical impacts
- They promote the development of new technologies and products by a technology assessment methodology

Course Content

Product development process, product life cycle, technology assessment, options and basic strategies,
tools for grasping future developments, organisation of processes,
control and measurement of innovation success,
promotion of innovation, patents, licences, joint ventures,
future developments.

Literature

Technologiemanagement: Schuh: Springer Verlag, 2011, 2. Auflage;
Innovationsmanagement: Schuh: Springer Verlag, 2010, 2. Auflage;
Managing Global Innovation; Boutellier, Gassmann; Springer Verlag, 2008, 3. Auflage;
Handbuch Technologiemanagement; Zahn; Schäffer Poeschel Verlag, 1995, 1. Auflage;
Integriertes Forschungs- und Entwicklungsmanagement; Weule; Hanser Verlag, 2001, 1. Auflage

Internationality (content-related)

The content is dedicated to be used in an international context.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Details will be provided starting in the semester the module is taught for the first time.	With the module work, all of the above-mentioned competencies are tested.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

3 Management

Fundamentals of Business Administration

Classification	Module ID	Kind of Module	ECTS
	3.1	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden and/or online	English	One Semester	Winter Semester	60

Module Convenor		Instructor	
Prof. Dr. Dr. Stefanie Steinhauser		Julia Rank	

Prerequisites*

None
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload	
This module is part of the module group *Management* in the Digital Technology and Management bachelor program. Compatibility with other programs of the university is to be examined individually.	Lecture, exercises, guest lecture	Contact time: Self-study: Total workload:	60 h 90 h 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:
- **Professional Skills:**
  - Students know basic business administration and management terms, functions and structures. Students will know and apply selected methods for decision-making and for assessing business management situations with quantitative and qualitative background.
  - Students are familiar with the relevant relationships between companies and the environment as a result of constitutive decisions within the framework of corporate management.
  - Students understand the integration of companies in a global market environment.
- **Methodological Skills:**
  - Students apply selected methods of analysis and decision-making in practical case studies of low to medium complexity.
- **Personal Skills (Social Competence and Self-competence):**
  - Students are familiar with the appropriate language for personal communication and discussions in selected business management contexts.
  - Students analyse, interpret and structure simple practical business issues in small group teamwork.

Course Content

The course "Fundamentals of Business Administration" introduces you to the main concepts of Business Administration ("Betriebswirtschaftslehre") from a managerial perspective. The course requires no specific prerequisites.
- Introduction: Why we do business, Corporate goals and objectives,
- Organizational structure and design
- Management: Fundamentals, Management functions, Strategic management
- Human resources
- Corporate Culture
- Change and Innovation

Dual students:
Dual students reflect on the content at their respective companies, bring their insights from case studies into the classroom, discuss them with the lecturer and other course participants, and thus start to understand and reflect upon challenges and limitations in practical application.

Literature

Detailed bibliographical information will be provided in the respective semester script!

Internationality (content-related)

The course content is internationally and universally relevant and applicable.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes Information about multiple-choice questions and a possible bonus system will be provided via Moodle and explained in the first lecture.	With the exam, all of the above-mentioned competencies are tested.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Principles of Accounting and Finance

Classification	Module ID	Kind of Module	ECTS
	3.2	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester	60

Module Convenor	Instructor
Prof. Dr. Dr. Stefanie Steinhauser	N.N.

Prerequisites*

None
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload	
This module is part of the module group *Management* in the Digital Technology and Management bachelor program. Compatibility with other programs of the university is to be examined individually.	Lecture, seminar with exercises, guest lecture, computer exercise	Contact time: Self-study: Total workload:	60 h 90 h 150 h

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Professional and Methodological Skills:
- o Have an overview of the elements and functions of managerial and cost accounting.
- o Describe basic instruments of managerial and cost accounting, apply them to simple business cases and derive implications from the results
- o know the basics and gain fundamental skills for preparing and analysing annual financial statements and management reports.
- o understand the fundamentals of balance sheet analysis and are able to calculate relevant key figures and analyse balance sheets at a low to medium level of complexity.
- o can systematically collect and evaluate relevant cost information in order to subsequently apply it to determine cost rates or calculations (application and system competence).
- o can identify problems in the determination of costs and calculation in practice with the acquired instrumental knowledge and solve them at least with simple approaches (problem-solving competence).
- o know the basics of corporate finance and the types and special features of financial decisions and can describe them.
- o explain the basics of investment decisions and selected investment calculation methods.
- o select classic methods of investment calculation and corporate finance to solve practical business problems of low to medium complexity.
- o analyse, interpret, structure and solve practical questions and tasks relating to corporate finance and the assessment of investment projects.

Personal Skills (Social Competence and Self-competence):
- o use the technical language of business administration in assignments, for later personal communication and discussion skills in financial and investment accounting topics.
- o analyse, interpret and structure practical business issues relating to corporate finance and the assessment of investment projects working individually or in small teams.

Course Content
- - Tasks and basic terms of external and internal accounting
- - cost accounting
- - managerial accounting
- - Basic terminology of the financial industry, objectives and instruments, e.g. financial ratios, finance plan.
- - Capital requirements and forms of capital; types of financing; financing rules; substitution of financing, credit security.
- - Practice of financial planning; liquidity planning; basics of investment management; most important procedures of static and dynamic investment calculation; types of investment; investment planning; qualitative assessment of investments.

Literature
Detailed bibliographical information will be provided in the respective semester script!

Internationality (content-related)
The course content is internationally and universally relevant and applicable.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes Information about multiple-choice questions and a possible bonus system will be provided via Moodle and explained in the first lecture.	With the exam and a possible bonus exercise, all of the above-mentioned competencies are tested.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Business Processes Management

Classification	Module ID	Kind of Module	ECTS
	3.3	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer Semester (for winter availability, please contact the module convenor)	60

Module Convenor	Instructor
Prof. Dr. Matthias Lederer	Prof. Dr. Matthias Lederer

Prerequisites*

None
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload	
This module is part of the module group *Management* in the Digital Technology and Management bachelor program. Compatibility with other programs of the university is to be examined individually.	Lecture, seminar with exercises, computer exercise	Contact time: Self-study: Total workload:	60 h 90 h 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- **Professional and Methodological Skills:**
  - o Define and describe important terms and concepts in the field of business processes.
  - o Use methods of business process modelling.
  - o Recognize possibilities for the optimization of business processes and plan their realization.
  - o Execute the most important software-based core business processes of a company.
  - o Capture the context and the integration of the most important production-related data, functions and documents in business.
  - o Identify, collect, assess and transfer relevant and necessary data for the software-supported execution of real business processes.
- **Personal Skills (Social Competence and Self-competence):**
  - o The students approach their own projects in an open and structured way.
  - o They are familiar with intervention techniques in organisations and are able to use them.
  - o They are able to work and communicate cooperatively as a team in order to solve a problem in the field of process management in a joint discussion.
  - o And they can independently expand and deepen the acquired knowledge and competences.

Course Content

- Fundamentals of business process management, process modeling, process optimization and process execution
- Business Process Modeling with different modeling techniques (e.g., EPC, BPMN)
- Methods of process design, process optimization
- Usage of current BPM tools
- Structure, sub-processes and activities of operational, production-related business processes
- Dissemination and functionality of operational planning systems as actors of a business process
- Relevant data types and sources for software-supported business processes
- Types of integration in the context of software-supported business processes
- Business analysis

Literature

- Allweyer, T. (2015): BPMN 2.0 - Introduction to the Standard for Business Process Modeling, 2nd edition, Norderstedt: Books on Demand.
- Dumas, M./La Rosa, M./Mendling, J./Reijers, H.A. (2018): Fundamentals of Business Process Management, 2nd edition, Berlin: Springer.
- Ganesh, K./Mohapatra, S./Anbuudayasankar, S.P./Sivakumar, P.: Enterprise Resource Planning, Cham: Springer International AG
- Laudon, K. C./Laudon, J.P. (2018): Management Information Systems, 15th edition, Harlow: Pearson Education Limited.
- Scheer, A. W. (2000). ARIS—business process modeling. Springer Science & Business Media.

Internationality (content-related)

The course content is internationally and universally relevant and applicable.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[1]	Scope/duration including weighting [2]	Learning Objectives/ Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes	

[1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

[2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Marketing and Sales

Classification	Module ID	Kind of Module	ECTS
	3.4	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter	60

Module Convenor	Instructor
Prof. Dr. Julia Heigl	Prof. Dr. Julia Heigl

Prerequisites*
None
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload	
This module is part of the module group *Management* in the Digital Technology and Management bachelor programme and part of the module group *Economics* in the Industrial Engineering bachelor program. Compatibility with other programs of the university is to be examined individually.	Lecture, seminar with exercises, guest lecture, project work, practical applications using software	Contact time: Self-study: Total workload:	60 h 90 h 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Professional skills:
- Students know the principles, basic analytical methods, main strategies and instruments of B2B marketing. In particular, they can describe the essential elements of marketing planning in B2B business as well as the importance of segmentation and customer prioritization, describe possible marketing strategies and starting points for defining value propositions, describe possible instruments for their operational implementation (product/service, price, communication) and know basic KPIs of marketing controlling.
- Students describe the operational sales process and know suitable instruments and methods for identifying targets and winning and developing customers.
- They reflect in a differentiated manner on the effects of digitalization on marketing and sales with regard to opportunities and risks.

Methodological skills:
- Students apply typical instruments of customer, market and competition analysis in simple case studies.
- Based on their analysis, they develop suitable marketing strategies, value propositions and sales concepts.
- They select suitable instruments of the marketing mix and apply these to case studies.
- They know key market, marketing and sales figures and apply these in case studies and data sets.
- They use phase-specific sales planning and sales tools.

Personal skills:
- Practical skills in sales presentation, relationship building, and effective negotiation strategies
- A grasp of ethical considerations in marketing and sales, with the ability to identify and navigate ethical dilemmas.
- Improved communication skills, both written and verbal, essential for effective marketing and sales interactions.

Dual students:
Dual students reflect on the content at their respective companies, bring their insights from case studies into the classroom, discuss them with the lecturer and other course participants, and thus start to understand and reflect upon challenges and limitations in practical application.

Course Content

- Special features of marketing in B2B (e.g. decision-making process, investment/life cycle approach)
- Market and customer planning: procedure, methods and instruments
- Strategies in B2B marketing and value proposition design
- Product (group) management, importance of services, opportunities through digitalization in product and service policy
- Price management
- Traditional vs. digital communication measures
- Marketing controlling
- Fundamentals and core process of sales management
- Acquiring new customers and initiating business
- Buying center analyses and management
- Checking inquiries and preparing offers
- Value selling
- Fundamentals of sales talks and negotiations
- Customer relationship management, customer retention and loyalty measures

Literature

- Will be provided in due time via Moodle

Internationality (content-related)

The course content is internationally and universally relevant and applicable. Companies from around the world will serve as example for case studies and practical examples.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Written Exam (90 minutes)	Written exam, duration 90 minutes (100 points) Reference to bonus system: A maximum of 20 points can be earned by independently completing accompanying exercises and case studies. The tasks and their due dates will be published in Moodle during the semester and must be submitted there by the deadline. Participation in the bonus system is voluntary. Bonus points can only be credited in the semester the bonus has been achieved. If the module examination is not taken or not passed in that semester, the bonus earned is forfeited. It is not possible to transfer bonus points to repeat examinations.	The exam is intended to test the beforementioned competencies.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Business Simulation

Classification	Module ID	Kind of Module	ECTS
	3.5	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer Semester	60

Module Convenor	Instructor
Prof. Dr. Julia Heigl	Prof. Dr. Julia Heigl

Prerequisites*
None
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Management* in the Digital Technology and Management bachelor program. Compatibility with other programs of the university is to be examined individually.	Lecture, project work, practical applications using software	Contact time: 60 h Self-study: 90 h Total workload: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- **Professional and Methodological Skills:**
  - Ability to apply central instruments of operational and strategic planning and control in the context of a business simulation
  - systematically collect, interpret and evaluate relevant information
  - Analyse company data and synthesise it logically and coherently
  - Identify profitability problems and develop solutions based on the acquired knowledge of instruments
  - use selected key figures to plan material and cash flows and marketing

- **Personal Skills (Social Competence and Self-competence):**
  - Reflect on the actions of management ethically and in relation to diverse stakeholders.
  - Work in groups, split tasks
  - present and defend business decisions and actions in a professional manner

Course Content

Business game incl. repetition and deepening of theoretical basics and reflection.
The students take on the role of the management board and compete in teams.
Complex decision-making situations (including competitive strategies, portfolio management, defining product characteristics, price, sales and communication, production and resource planning, investment decisions and financing, personnel management, raw material purchasing and logistics) are prepared and processed with information support in the group.
Decisions are made on the basis of business analyses (including financial reports: balance sheet, income statement, cash flow statement, segment report; cost accounting; management with key figures on profitability, liquidity, financing, asset structure) and calculations. The students receive or develop planning and control tools for this purpose.
The students prepare elaborations on strategic decisions and capital market decisions. The business game concludes with the simulation of a general meeting.

Literature

Script, exercises and further information are made available via the learning management system "Moodle". A registration for the course is therefore required. The password will be announced in the first session.

Internationality (content-related)

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Module work (ModA)	Project Work in Groups 50% Presentation, similar to board presentation at annual shareholder meeting 50% written report, similar to Management's discussion and analysis of financial condition and results of operations (MD&A)	The group project is used to test the practical learning content and competence profiles, including teamwork and presentation skills.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

4 Integrative Modules

Project Management and Agile Methods

Classification	Module ID	Kind of Module	ECTS
	4.1	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester	60

Module Convenor	Instructor
Prof. Andreas Dörner	Prof. Andreas Dörner / Peter Cizek

Prerequisites*

None

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload	
The module is part of the module group *Integrative Modules* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Seminar-based teaching with exercises.	Contact time/coaching: Self-study: Total workload:	60 h 90 h 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:
- **Professional and Methodological Skills:**
  - o The students know the basic methods and tools of project management.
  - o They are able to select the appropriate ones for a given context.
  - o They can apply these methods and tools flexibly to projects.
  - o They are able to manage their own projects responsibly.
  - o They are prepared to deal with the dynamics of a real project.
- **Personal Skills (Social Competence and Self-competence):**
  - o The students approach their own projects in an open and structured way.
  - o They are able to work and communicate cooperatively as a team to manage a project together.
  - o They have the ability to independently expand and deepen the acquired knowledge and competences.

Course Content

- Function, types, contents and processes of conventional project management
- Content and use of basic project documents such as project proposal, project order, work-breakdown-structure and Gantt-chart
- Process and resource planning in projects
- Use of an IT-tool with exercises for project planning and control
- Communication, teamwork, self-reflection and versatility in pro- jects
- Introduction and practice of agile project management methods

For dual students:

Dual students reflect on the content at their respective companies, bring their insights from case studies into the classroom, discuss them with the lecturer and other course participants, and thus start to understand and reflect upon challenges and limitations in practical application. In addition, the project worked on by dual students may be suggested by the dual partner company. Non-dual students may participate in these projects if the number of participants allows.

With appropriate evidence, successfully completed further training courses offered by the dual partner company can be recognised if they are relevant to the subject (e.g. in-house training, certificates, etc.). In this case, no grade will be awarded. The possibility of credit transfer must be clarified in advance with the module convenor.

Literature

- Project Management Institute: „A Guide to the Project Management Body of Knowledge: PMBOK Guide ", B&T, 2004
- Bibik, I.:"How to kill the Scrum Monster", Springer Verlag, 2018
- Aken van, J./Berends, H./Bij van der, H. (2012): Problem solving in organizations. A methodological handbook for business and management students. Cambridge: Cambridge University Press.
- Campell, C. (2007): The One-Page-Project Manager, Communicate and manage any project with a single sheet of pa- per. Hoboken: Wiley.
- Easterby-Smith, M./Thorpe, R./Jackson, P.R. (2015): Management & Business Research, 5th edition, Los Angeles: SAGE.
- Hermarij, J. (2016): The Better Practices of Project Management. Based on the IPMA Competences, 4th edition, Amersfoort: Van Haren Publishing.

Internationality (content-related)

The content is valid in any international digital technology and industrial engineering environment.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form [*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Module work (ModA)	Presentation and Project Documentation.	With the module work, all of the above-mentioned competencies are tested, see Description of Qualifications and Course Content.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Logistics 1

Classification	Module ID	Kind of Module	ECTS
	4.2	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	1 semester	Each summer semester	60

Module Convenor	Instructor
Prof. Dr.-Ing. Günter Kummetsteiner	Harald Weber

Prerequisites*

None

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Integrative Modules* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lectures with integrated practical demonstrations and exercises	Contact time: 60 h Pre- and post-processing: 50 h Exam preparation: 40 h Total 150h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological, and personal skills and competencies:

- **Professional Skills:**
    - Knowledge on logistics: Terms, problem statements, tasks, and common methods.
    - Ability to explain and use selected calculation methods.
    - Understand logistical principles and opportunities offered by an SAP ERP system (ECC 6.0 and S/4HANA).
- **Methodological Skills:**
    - Ability to know and rate different options and to consult regarding usability in different scenarios.
    - Ability to use logistics theories in practice, i.e., execute material requirements planning in an SAP ERP system.
- **Personal Skills (Social Competence and Self-competence):**
    - Ability to plan and execute typical logistics tasks from the perspective of different roles.
    - Ability to discuss with stakeholders and logistics experts on professional level.
    - Ability to collaborate as a competent interdisciplinary project team member for common logistics topics.

Course Content

- Introduction in logistics and logistics components of SAP ERP
- Product and production planning
- Production
- Procurement logistics
- Inventory management
- Distribution logistics
- Quality management (optionally)
- Recent trends and outlook

Literature

Presentation script, further exercises, further training material used or recommended in lessons.

Internationality (content-related)

Much of the content covered is of relevance worldwide. One objective is to illustrate how logistics could help regarding competitiveness in a globalized world. Legal specifics of countries are not mentioned. ERP systems like SAP S/4HANA are used globally, especially in bigger companies. The terms used are valid in international context.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[1]	Scope/duration including weighting [2]	Learning Objectives/Competencies to be Assessed
Written examination (Kl90)	Written Exam, 90 minutes (Weighting: 100%)	The written examination assesses the entire learning contents and competence profiles.

[1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

[2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Industrial Engineering

Classification	Module ID	Kind of Module	ECTS
	4.3	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer Semester	60

Module Convenor	Instructor
Prof. Andreas Dörner	Prof. Andreas Dörner

Prerequisites*

None

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Integrative Modules* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lectures with integrated practical demonstrations and exercises	Contact time: 60 h Self-study and exam preparation: 90 h Total workload: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- **Professional Skills:**
    - o Students will be able to explain the essential basics and core functions of operational performance (focus: production of goods) and their interrelationships.
    - o They can apply selected calculation methods.
- **Methodological Skills:**
    - o Students can comprehend technical contents and use them in a problem-oriented manner.
    - o Students can choose the right methods for process optimization and problem-solving in production
- **Personal Skills (Social Competence and Self-competence):**
    - o Students can participate in discussions on the topic using the specific vocabulary.

Course Content

- Fundamentals of Industrial Engineering and industrial Production
- Basic documents (drawings, parts lists, work plans) and essential tasks of order processing in manufacturing companies, i. a. from the areas of work planning, purchasing, production and assembly.
- Production Systems and Lean Management
- Quality Management
- Production Networks

Literature

Scripts, exercises, review questions, additional media (photo, video, ...)

Dumbrowski and Krenkel (2021): Ganzheitliches Produktionsmanagement. Strategischer Rahmen und operative Umsetzung. Springer. Available under: DOI 10.1007/978-3-662-62452-4, ISBN 978-3-662-62451-7

Nassehi (2018): Operations Management, in: The International Academy for Production Engineering et al.. CIRP Encyclopaedia of Production Engineering. Available under: DOI 10.1007/978-3-642-35950-7_16746-1

Ortiz and others (2015): Achieving Competitive Advantage through Quality Management. Springer. Available under: DOI 10.1007/978-3-319-17251-4

Internationality (content-related)

The content is valid in any international industrial engineering environment.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Written Exam (Kl90)	Written Exam, 90 minutes Bonus system: There is the possibility of grade improvement (German: "Notenverbesserung") through voluntary performances during the course. By preparing a presentation of short relevant topics or tasks given during the lecture, a bonus of max. 10 % of the total number of points attainable in the written examination can be added in the same semester to the points actually attained in the written examination. The grade calculation then refers to the total points, whereby more than a grade of 1.0 cannot be achieved. The bonus points apply only in the semester in which they are earned. The offer exists only in semesters in which a course is offered by the lecturer. There is no individual entitlement for students for an offer of such a bonus ((German: "Notenverbesserung") by the lecturer.	With the exam and a possible bonus exercise, all of the above-mentioned competencies are tested.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Ethics in Business and Technology

Classification	Module ID	Kind of Module	ECTS
	4.4	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer Semester	60

Module Convenor	Instructor
Prof. Dr. Julia Heigl	Georg Klampfl

Prerequisites*
None
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Integrative Modules* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Lectures with integrated practical demonstrations and exercises, project work	Contact time/coaching: 60 h Self-study: 90 h Total workload: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Part A: Foundations of Business Ethics
- define the term business ethics and understand its importance to business.
- be familiar with ethical theories in the context of business and be able to apply them to practice.
- develop an understanding for different market participants in terms of consumer, producer and investor ethics.
- explain the different forms of business ethics standards and concepts.
- be familiar with the difference between Corporate Giving and Corporate Volunteering.
- explain the different types of business ethics instruments.
- identify and apply suitable forms of ethical instruments for companies in practice.

Part B: Foundation of Technology Ethics:
- define the term and the associated subject area of technology ethics and relate it to the social challenges of new technologies.
- be familiar with ethical decision-making models in the context of technology ethics and apply these to case studies.
- develop and apply appropriate evaluation and consideration criteria for (new) innovative technologies.
- develop their own ethical position on technology ethics and apply it in ethical-argumentative discussions.
- understand the content of technology assessment and develop an understanding of future relevant developments in technology ethics

Course Content

This course explores the ethical challenges facing businesses and digital technology today, and how individuals and firms can address those challenges. The course aims to enhance the skills and expertise of participants through combining examination of ethical and managerial theory with discussion of common ethical problems in context. This achieved using real-world examples throughout the text and extended case studies at the end of each chapter. Course material includes individual moral theory, the development of ethical organizational culture, the development of ethical management systems designed to respond to ethical challenges, and wide-ranging discussion regarding major trends, challenges, and opportunities in the field of ethical business and technology ethics.

Part A (weeks 1-5): Foundations of Business Ethics

Week	Topic	Reading	Suggested Description of Qualifications
1	**Fundamentals of business ethics**	*Chapter 1*	• provide a basic definition of business ethics • distinguish between ethics, morality, values and norms • evaluate the importance of business ethics as an academic subject and as a practical management issue • specify ethical challenges in different types of organisations • explain the different sub-areas of applied ethics
2	**Theories and applications of (business) ethics**	*Chapter 2*	• distinguish the stages of moral development according to Kohlberg • provide an overview of the historicity of moral theories • explain the different major theories of ethics • critically evaluate the previously learned theories • apply the theories to current examples of real-life companies
3	**Responsibility of market participants**	*Chapter 3*	• provide an overview of the different market participants and their ethical approaches • distinguish between the different reference levels of business ethics • understand and critically reflect consumers, producers and investor ethics
4	**Business ethics standards and concepts**	*Chapter 4*	• explain the different concepts of business ethics • distinguish between Corporate Giving and Corporate Volunteering • critically reflect the benefit of the different standards for companies • apply Corporate Social Responsibility, Corporate Citizenship and Corporate Governance in business cases

5	**Instruments of business ethics**	*Chapter 5*	• provide a basic definition of Value Management • distinguish between normative, organizational and resolution instruments • analyse and critically reflect examples of corporate ethics instruments • explain the different process stages of value management

Part B (weeks 6-10): Foundations of Technology Ethics

Week	Topic	Reading	Suggested Description of Qualifications
6	**Introduction to Technology Ethics, overview of relevant application areas**	Chapter 6	• understand and define the term technology ethics • overview and describe areas of application of technology ethics
7	**Ethical decision-making models in the context of technology ethics**	Chapter 7	• obtain an overview of ethical decision-making models in the context of technology ethics • select and apply relevant evaluation and consideration criteria • develop an own position on the topic of technology ethics
8	**Application of theoretical models to technical-ethical questions, ethical aspects of digital technologies**	Chapter 8	• apply theoretical models appropriately to questions of technological ethics (e.g. autonomous driving) • gain an overview of ethical aspects of digital technologies
9	**Technology assessment and Quo Vadis technology ethics**	Chapter 9	• understand the process of technology assessment • apply individual elements of the process to technical and digital examples • gain an understanding of unresolved ethical issues in relation to new technologies • be able to make accurate assessments of future developments in technology ethics
10	**Final presentation and discussion of the seminar paper**	Chapter 10	• Presentation of a selected technical-ethical challenge • conducting an ethically coherent discussion on the seminar topic • subsequent shooting of a one-minute video on takeaways from the seminar topic and the event

Literature

- Crane, Matten et. al. (2019): Business Ethics - Managing Corporate Citizenship and Sustainability in the Age of Globalization (5th edition), Oxford New York: Oxford University Press
- Dörr, S. (2021): Corporate Digital Responsibility – Managing Corporate Responsibility and Sustainability in the Digital Age (1st edition), Berlin: Springer Verlag GmbH
- Farrel, O. C., Fraedrich, J., Farrel, S. (2021). Business Ethics: Ethical Decision Making and Cases (13th edition), Boston: Cengage
- Kefi, H. (2015): Information Technology Ethics – Concepts and Practices in the Digital World (1st edition), Newcastle: Cambridge Scholars Publishing
- Siep, Ludwig (2022): Ethics and the limits of technology (1st edition), Paderborn: Brill mentis
- Velasquez, M. G. (2014). Business Ethics: Concepts and Cases (7th edition), Harlow: Pearson Education Limited
- van de Poel, I.; Royakkers, L. (2011): Ethics, Technology, and Engineering - An Introduction, (1st edition), Chichester, West Sussex: Wiley-Blackwell
- Werthner, H., Ghezzi, C., Kramer, J., Nida-Rümelin, J. (2024): Introduction to Digital Humanism – A Textbook (1st edition), Cham: Springer Nature Switzerland

Internationality (content-related)

the topic is internationally applicable and relevant

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1)]	Scope/duration including weighting [*2)]	Learning Objectives/ Competencies to be Assessed
Module work (ModA)	50 % weighting each for business ethics and technology ethics: proven by seminar paper (written + oral) for freely selectable business and ethical issues: • written elaboration (approx. 10 pages) • presentation of the results (30-minute presentation incl. discussion) • shooting of a 1-minute summary video (reflection on the presentation and the lecture)	The Form covers the above mentioned professional and methodological skills.

[*1)] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2)] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Entrepreneurial Project 1: Developing a Digital Solution

Classification	Module ID	Kind of Module	ECTS
	4.5	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester	30

Module Convenor	Instructor
Prof. Dr. Kris Dalm	Matthias Pohl

Prerequisites*

None

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload	
The module is part of the module group *Integrative Modules* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Guided project work	Contact time/coaching: Self-study: Total workload:	60 h 90 h 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

In this module, students develop digital solutions based on innovations and questions from industrial companies. Students work solution-oriented in order to develop a digital solution. The procedure starts with understanding the issues, planning the project professionally based in project management tools, developing the solution (e.g. in form of a prototype) and presenting it to the "customer". Finally, usability and acceptance engineering will be conducted based on the developed prototype. The projects can also be self-invented.

Professional and Methodological Skills:
- Applied project management (classic and agile)
- User-centred development and design
- (Rapid)-Prototyping
- Acceptance engineering
- Usability engineering

Personal Skills and Competencies:
- Interaction with real industrial questions
- Communication with industrial companies
- Critically reflect upon own ideas
- Solution-driven thinking
- Presentation skills

Course Content

- Applied project management (classic and agile)
- User-centred development and design
- (Rapid)-Prototyping
- Acceptance engineering
- Usability engineering
- Presentation

Dual students work on a project for their dual company. Non-dual students may participate in these projects if the number of participants allows.

Literature

- Greene: Entrepreneurship Theory and Practice. 2020. ISBN 978-1137589552.
- Adithan: Rapid Prototyping. 2015. ISBN 978-8126920556.
- Brooke, J. (1996) SUS - A quick and dirty usability scale, Usability Evaluation in Industry.
- Weiss, A., Bernhaupt, R., Lankes, M. and Tscheligi, M. (2009) The USUS evaluation framework for human-robot interaction, Proc. of AISB 09. 4. 11-26.

Internationality (content-related)

Students develop digital solutions in cooperation with international companies.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Module work (ModA)	Project Work in Groups, including final presentation and documentation	The group project is used to test the practical learning content and competence profiles, including teamwork and presentation skills.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Entrepreneurial Project 2: Business Plan for a Digital Solution

Classification	Module ID	Kind of Module	ECTS
	4.6	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester	30

Module Convenor	Instructor
Prof. Dr. Dr. Stefanie Steinhauser	Matthias Pohl

Prerequisites*

None

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Integrative Modules* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Seminaristic lecture, team work	Contact time/coaching: 60 h Self-study: 90 h Total workload: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- Know the important concepts and instruments of entrepreneurship.
- Identify and understand the determinants of successful entrepreneurship and apply them.
- Find, analyse and evaluate business ideas in a systematic process.
- Develop and evaluate alternative solutions to individual modules of a business plan and select the best possible solution alternative with regard to the success potential of the business idea.
- Understand the interactions between the planning modules of a business plan and adjust the planning parameters accordingly.
- Present a convincing business idea for potential investors.

Course Content

Team project continued: business plan, commercialisation and business model for developed digitisation solution.
- Finding ideas for an innovative and sustainable business idea and evaluating them with regard to their prospects of success.
- Methods for the development of a business plan.
- Linking elementary economic basic functions (e.g. planning, evaluating, analysing consequences, adjusting planning parameters) along the steps to create a business plan for a business idea in an iterative process.
- Development of a business plan containing all essential components for the documentation and presentation of a business idea to potential investors:
  o Trigger, Background
  o Product and service
  o Customer benefits and USPs (Unique Selling Proposition) o Entrepreneur team
  o Market and competition
  o Target groups, marketing and sales
  o Business system and organization
  o Timetable for implementation
  o Opportunities and risks
  o Financial plan and financing

Dual students work on a project for their dual company. Non-dual students may participate in these projects if the number of participants allows.

Literature

- Abrams, R. (2014): Successful Business Plan, 6th edition, Redwood City, CA: Planning Shop.
- Pinson, L. (2014): Anatomy of a Business Plan, 8th edition, Tustin, CA.: Out of Your Mind & Into The Marketplace.
- Schwetje, G./Vaseghi, S. (2007): The Business Plan, Berlin: Springer.

Internationality (content-related)

Students are encouraged to develop ideas that have the potential for a potential international commercialization;
Entrepreneurship, business plans and business models are universally relevant topics.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Module work (ModA)	Project Work in Groups	The group project is used to test the practical learning content and competence profiles

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please provide additional information on the weighting (in % share) and, if applicable, explain the bonus system

Research Project

Classification	Module ID	Kind of Module	ECTS
	4.7	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants	
Weiden	English	One Semester	Winter and Summer Semester	Contact time/coaching: Self-study: Total workload:	60 h 90 h 150 h

Module Convenor	Instructor
N.N.	N.N.

Prerequisites*

None

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Integrative Modules* of the Digital Technology and Management Bachelor's degree program. The usability in other courses of study must be checked in each individual case.	Project work, self study, lab/field study	

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Students are able to

- Formulate a clear and feasible research question based on a review of existing literature.
- Design an appropriate research methodology and justify its selection.
- Collect and analyze qualitative or quantitative data effectively.
- Interpret research findings in relation to existing scientific knowledge.
- Communicate research results clearly through written reports and oral presentations.
- Demonstrate critical thinking and problem-solving skills in research planning and execution.
- Apply ethical considerations and academic integrity principles in conducting research.
- Reflect on personal research experiences and suggest improvements for future studies.

Course Content

This module provides students with an opportunity to apply research methodologies, data collection, and analytical techniques to conduct an independent research project. Under supervision, students will formulate a research question, design a study, collect and analyse data, and present their findings in a structured research report. The module aims to enhance critical thinking, project management, and problem-solving skills necessary for scientific inquiry.

Preliminary Course Schedule, Topics and Key Activities

1	Introduction to Research Projects	Understanding project scope, selecting topics, defining research questions
2	Literature Review	Sourcing academic literature, critical analysis, writing a review
3	Research Design and Methodology	Selecting appropriate methodologies, ethics in research
4	Proposal Development	Writing research proposals, justifying research significance
5	Data Collection Techniques	Qualitative & quantitative methods
6	Data Analysis Approaches	Statistical tools, coding qualitative data
7	Mid-Semester Review & Feedback	Presenting progress, addressing challenges
8	Writing Research Findings	Structuring results, discussing key insights
9	Drafting Research Report	Writing the introduction, methodology, and results
10	Editing & Refining Report	Revising drafts, improving clarity and coherence
11	Research Presentation	Preparing slides, effective scientific communication
12	Final Submission & Reflection	Submitting the report, self-assessment of research experience

Literature

Will be provided by the lecturer

Internationality (content-related)

The research topic covered should be of relevance to the international scientific community.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[1]	Scope/duration including weighting [2]	Learning Objectives/Competencies to be Assessed
Module work (ModA)	Research Project (Project Work, 100%), consisting of the following elements, due three workdays before the last session: • Final Research Report (60%) • Oral Presentation (30%, each team member must present) • Self and Peer Assessment (10%)	The group project is used to test the practical learning content and competence profiles, including teamwork and presentation skills.

[1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

[2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

5 Language and Soft Skills

English for Academic Purposes

Classification	Module ID	Kind of Module	ECTS
	5.1	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Annually in Winter Semester	60 (30 per group)

Module Convenor	Instructor
MSc (UK), MA (USA) Amy De Vour-Schön	Dr. Lisa Mora

Prerequisites*

None

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload	
This module is part of the module group *Language and Soft Skills* in the Digital Technology Management bachelor program. Compatibility with other programs of the university is to be examined individually.	Seminar with exercises (role-play exercises, partner work, group work)	Contact time: Self-study: Total workload:	60 h 90 h 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Professional Skills:

Students learn selected vocabulary and concepts and acquire skills (listening, reading, writing, speaking) used in academic settings.

Personal Skills (Social Competence and Self-competence):

Students acquire the necessary skills to work cooperatively in teams and present group-related results in presentations, role plays and dialogues.

Course Content

- Preparing for Academic Study
- Description and Definition: Extracting key factual information
- Using Evidence: Identifying main ideas and supporting evidence
- Classification
- Connecting Ideas: Argumentation
- Describing Processes: Predicting content and using signposting language
- Comparison and Contrast
- Fact and Opinion
- Developing an Argument
- Cause and Effect
- Evaluation
- Independent Learning: Summarizing information

Literature

De chazal, Edward & McCarter, Sam. Oxford EAP: A course in English for Academic Purposes, Upper-Intermediate B2, Oxford University Press (2012)

Hewings, Martin. Cambridge Academic English, An integrated skills course for EAP. Upper Intermediate, Cambridge University Press (2012)

Note: Additional materials may be provided by instructor

Internationality (content-related)

English literature, international case studies and examples, international/English video, audio and guest lectures. Students also interact with other (international) students as required in course.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[1]	Scope/duration including weighting [2]	Learning Objectives/ Competencies to be Assessed
ModA	**Graded exercises:** There are **three oral/written/listening graded exercises** during the semester. Each have a weighting of 33%. • **Graded elements combined need to be passed with a 4,0 (60%) or better and form the final grade.** • Students **need to register for each graded exercise** in the Moodle classroom at the latest, two weeks before the exercise is due. Not doing so will result in the student not being able to participate in the given graded exercise. • **Not attending a graded exercise** for which the student was duly registered on the scheduled date and time **will result in the student failing that exercise**. • It is only in the event the student submits validated proof of an excused absence within <u>three working days</u> that a make-up date will be allowed. • Students **also need to register for the exam in PRIMUSS** during the exam registration period so the final grade can be officially reported. • **No grades will be saved**. Should a student fail the overall course, all exercises will need to repeated on the next occasion the course is read.	The entire learning contents and competence profiles are assessed by way of the aforementioned examination forms.

[1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

[2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Technical English

Classification	Module ID	Kind of Module	ECTS
	5.2	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Annually in Summer Semester	60 (30 per group)

Module Convenor	Instructor
MSc (UK), MA (USA) Amy De Vour-Schön	MSc (UK), MA (USA) Amy De Vour-Schön

Prerequisites*

None
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload	
This module is part of the module group *Language and Soft Skills* in the Digital Technology Management bachelor program. Compatibility with other programs of the university is to be examined individually.	Seminar with exercises (role-play exercises, partner work, group work)	Contact time: Self-study: Total workload:	60 h 90 h 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:
Professional Skills:

- Students learn selected vocabulary and concepts and acquire productive skills (listening, reading, writing, speaking) used in relation to technical English.

Personal Skills (Social Competence and Self-competence):
- Students acquire the necessary skills to work cooperatively in teams and present group-related results in presentations, role plays and dialogues.

Course Content

Electricity basics
Engineering tools
Control Technology
Manufacturing/Lean/agile productions
Material sciences
PESTEL analysis
Health and Safety
Information Technology
Ethics and CSR
Quality Management
Project Management
Global Supply chains/Stock Management
Carbon Footprint Reduction

Literature

Büchel, W., Carey, C., Schäfer, M. & Schäfer, W., Technical Milestones. Englisch für technische Berufe. Klett Verlag, 2013
Additional materials will be provided by instructor

Internationality (content-related)

English literature, international case studies and examples, international/English video, audio and where possible, guest lectures. Students also interact with other (international) students as required in course.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/ Competencies to be Assessed
ModA	**Graded Exercises** • There are **three oral/written graded exercises** during the semester. Each have a weighting of 33%. • **Graded elements combined need to be passed with a 4,0 (60%) or better and form the final grade.** • Students **need to register for each graded exercise** in the Moodle classroom at the latest, two weeks before the exercise is due. Not doing so will result in the student will not be able to participate in the given graded exercise. • **Not attending a graded exercise** for which the student was duly registered on the scheduled date and time **will result in the student failing that exercise**. It is only in the event the student submitted validated proof of an excused absence within three working days that a make-up date will be allowed. • Students **also need to register for the exam in Primuss** during the exam registration period so the final grade can be officially reported. • **No grades will be saved**. Should a student fail the overall course, all exercises will need to repeated on the next occasion the course is read.	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Intercultural Communication

Classification	Module ID	Kind of Module	ECTS
	5.3	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer Semester	60

Module Convenor	Instructor
Prof. Dr. Julia Heigl	Prof. Dr. Julia Heigl / Philipp Schädler

Prerequisites*

None

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload	
This module is part of the module group *Language and Soft Skills* in the Digital Technology Management bachelor program. Compatibility with other programs of the university is to be examined individually.	Seminar with exercises (role-play exercises, partner work, group work)	Contact time: Self-study: Total workload:	60 h 90 h 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- Outline the most important theoretical approaches to intercultural communication.
- Explain the impact of one´s own cultural conditioning on values, perception, expectations and behavior.
- Interpret the behaviour of people from different cultures considering their respective cultural values.
- Create and apply effective communications strategies to overcome obstacles in intercultural encounters.
- Analyse intercultural business encounters by applying intercultural terminology, theory and methods and adopt the own behavior accordingly.

Course Content

- Introduction and Basic Knowledge: concept of culture, cultural identity, perception and interpretation, stereotypes and prejudices.
- Cultural Dimensions as a theoretical framework to compare cultures
- Basic communication concepts
- Application in business: multicultural and/or teamwork, meetings with team members from different cultures, critical incidents
- Negotiation as a specific form of communication

Dual students:

Dual students reflect on the content at their respective companies, bring their insights from case studies into the classroom, discuss them with the lecturer and other course participants, and thus start to understand and reflect upon challenges and limitations in practical application. In addition, the business role play case for dual students may be suggested by the dual partner company. Non-dual students may participate in these projects if the number of participants allows.

Literature

Adler, N. J./Gundersen, A. (2008): International dimensions of organizational behavior. 5th edition, Mason: Thomson South- Western.
Bakić-Mirić N. An Integrated Approach to Intercultural Communication. Cambridge Scholars Publishing; 2012. Accessed January 11, 2022.
Comfort, J./Franklin, P. (2014): The Mindful International Manager. How to work effectively across cultures, 2nd edition, London: Kogan Page.
Fay Patel, Mingsheng Li, Prahalad Sooknanan. Intercultural Communication : Building a Global Community. Sage Publications Pvt. Ltd; 2011. Accessed January 11, 2022.
Hofstede, G./Hofstede, G. J./Minkov, M. (2010): Cultures and organizations. Software of the mind: International cooperation and its importance for survival. 3rd edition, New York: McGraw-Hill.
Schroll-Machl, S. (2016): Doing business with Germans. Their perception, our perception, 6th edition, Göttingen: Vandenhoeck & Ruprecht.
Novinger, Tracy. Intercultural Communication: A Practical Guide, New York, USA: University of Texas Press, 2021.

Internationality (content-related)

Given by topic of the course

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/ Competencies to be Assessed
Module Work (ModA)	Team project for the preparation, implementation and reflection of an intercultural business situation / critical incident. The situation is to be acted out in the form of a role play together with a second team (duration 30 minutes, each team member must take an active role). The students represent one culture in the team, which meets a second one. The team, situation, culture and pairing as well as the date of the performance will be determined in the third course at the latest. Planning and preparation as well as the course and its critical reflection must be submitted in the form of a report (20-25 pages) on the penultimate date, each team member must make a contribution.	The module work covers the above mentioned professional and methodological skills.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Basic Electives

Please note that this catalogue may change each semester. There is no claim to a repeated offer of a particular module. Additional electives may be offered and outlined in the catalogue in due time.

Students are required to complete **four** Basic Electives (Basic Elective 1-4, ID 5.4-5.7 as outlined in the curriculum) **for a total of 20 ECTS**. Different choices are recommended depending on a student's knowledge of the German language. **All Students** are recommended **to consult with the head of the study programme to select appropriate modules**. Participation in **any language classes other than German I-IV must be approved by the Head of the study programme** or the deputy via formal application by **email to j.heigl@oth-aw.de.**

Students with knowledge of the **German** language of **less than level B2.2**				
In order to enable sufficient language skills to complete the practical study semester as well as participation in all elective modules, some of which are offered in German, a sufficient knowledge of the German language must be proven by a language certificate corresponding to level B2 according to the Common European Framework of Reference for Languages before entering the third study section. For this purpose, it is highly recommended that you choose the following modules:				
Recommended Basic Electives	**Module ID**	**SWS**	**ECTS**	**Rhythm**
German I (B1.1)*	BEG1	4	5	Winter and Summer
German II (B1.2)*	BEG2	4	5	Winter and Summer
German III (B2.1)*	BEG3	4	5	Winter and Summer
German IV (B2.2)*	BEG4	4	5	Winter and Summer

Students with knowledge of the **German** language of **B2.2**				
In order to enable progression to subsequent Master's degree programs, students are recommended to deepen their knowledge of the German language. For this purpose, it is highly recommended that you choose the following modules:				
Recommended Basic Electives	**Module ID**	**SWS**	**ECTS**	**Rhythm**
German V (C1.1 Part 1)*	BEG5	4	5	Summer
German VI (C1.1 Part 2)*	BEG6	4	5	Winter
Two additional modules of their choice	*(see below)*	*8*	*10*	*Winter and Summer*

* The detailed description of the German language courses can be found in the Module Handbook of the Language Center at https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/modulhandbuch/. German V and VI may either be taken as basic elective or as specialization elective, but **only with approval by the Head of the study programme** or the deputy, and each course can only be credited once. **For all German classes, please register directly with the Language Center**. https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/anmeldung/

Students who have **acquired their university entrance qualification in German /** Students who acquire their official B2 (better C1.1) certificate outside OTH AW				
Basic Electives (**4 modules** to be chosen,i.e. two each per study section 1&2)	**Module ID**	**SWS**	**ECTS**	**Rhythm**
Summer School on Lowering Barriers for Minority Groups in Retail	BELB	4	5	Summer
International Winter Week on Service Design	BESD	4	5	Winter
KREA Spring School on Inspirational Story Telling	BEKS	4	5	Summer
International Summer School on Sustainability	BESU	4	5	Summer
International Retail Innovation Challenge	BERC	4	5	Summer
Social Entrepreneurship Project	BESE	4	5	Winter
International Short Stay	BEST	4	5	Summer/Winter
Digital Business and Information Systems: A Managerial Approach	BEDB	4	5	Summer/Winter
Basic Sustainability	BEBS	4	5	Summer/Winter
Future Skill	BESP	4	5	Summer/Winter
MINT Skill	BEMS	4	5	Summer/Winter
Green Office	BEGO	4	5	Summer/Winter
Data Collection Methods in the Social and Behavioral Sciences	BEDC	4	5	Summer/Winter
Innovation & Entrepreneurship for Better Futures: impACTup!	BEIE	4	5	Summer/Winter
Foreign Language I**	BEL1	4	5	Summer/Winter
Foreign Language II**	BEL2	4	5	Summer/Winter

The detailed description of the Foreign language courses can be found in the Module Handbook of the Language Center https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/modulhandbuch/. However, neither German (Double Degree students are exempted from that rule) nor English classes may be selected as Foreign Language class. For advanced students, the language modules of the TM study programme are also open. However, there is no claim to participation. **After having obtained approval by the Head of Study programme or the deputy, for all language classes, please register directly with the Language Center.

Basic Electives for Double Degree students				
2 modules to be chosen, one in each of the first 2 semesters of their studies. If students already possess German A1.2 and Czech A1.1. knowledge, they may choose a different Basic Elective. Please consult with the Head of Study programme in advance.	**Module ID**	**SWS**	**ECTS**	**Rhythm**
Czech A1.1*	BECZ	4	5	Summer

Summer School on Lowering Barriers for Minority Groups in Retail

Classification	Module ID	Kind of Module	ECTS
	BELB	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden / Geel, BE	English	One Semester	Summer Semester	Approx. 5 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Julia Heigl	Marc Clerx and international team of lecturers guided

Prerequisites*

Formal application to Module Convenor; details available from Module Convenor.

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Field trip, international seminar and group work	150 h

Description of Qualifications

https://thomasmore.be/en/agenda/lowering-barriers-minority-groups-retail

Course Content

https://thomasmore.be/en/agenda/lowering-barriers-minority-groups-retail

Literature

Will be provided in due time

Internationality (content-related)

This summer school is open to students and professionals from all over the world and of any kind of discipline. This will turn our Summer school into a multidisciplinary and intercultural challenge.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[1]	Scope/duration including weighting [2]	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Project work (team task, 60 %) Reflection paper (individual task, 40 %; 15 pages, due at the end of the German lecture period)	The entire learning contents and competence profiles are assessed by way of the aforementioned examination forms

[1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

International Winter Week on Service Design

Classification	Module ID	Kind of Module	ECTS
	BESD	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden / international location tbd	English	One Semester	Winter Semester	Tbd *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Julia Heigl	tbd

Prerequisites*
Formal application to Module Convenor; details available from Module Convenor. * Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Field trip, international seminar and group work	150 h

Description of Qualifications
After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies: Details available from course convenor

Course Content
Details available from course convenor Blended intensive programme consisting of online modules and a physical week from 18-22 November 2024 in Malta.

Literature
Communicated to participants after admission

Internationality (content-related)
This winter school is open to students and professionals from all over the world and of any kind of discipline. This will be a multidisciplinary and intercultural challenge.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[1]	Scope/duration including weighting [2]	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Project work (team task, 60 %) Reflection paper (individual task, 40 %; 15 pages, due at the end of the German lecture period)	The entire learning contents and competence profiles are assessed by way of the aforementioned examination forms

[1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

KREA Spring School

Classification	Module ID	Kind of Module	ECTS
	BEKS	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden / Helsinki	English	One Semester	Summer Semester	8 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Julia Heigl	Team of international lecturers

Prerequisites*
Formal application to Module Convenor; details available from Module Convenor. *** Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.**

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Field trip, international seminar and group work	150 h

Description of Qualifications
After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies: creativity multicultural teamwork sustainable customer experience sustainable marketing digital storytelling coaching-based autonomous learning

Course Content
Creativity: Krea Spring School offers you an intensive international week where students, entrepreneurs, branding professionals and university experts from all over the world come together for co-creation workshops in Helsinki. We give you the tools you need to blossom into a creative wizard in digital storytelling that fosters sustainable living and consumption. Read stories about Krea Spring School and Creative Agency Krea in English! Customer Experience: You will work for a client organization and learn how to analyze sustainable customer experience. Based on your analysis, you will script and produce a customer-centric story that breaths new life into the customer perspective and highlights customer experience from an inspirational angle. Our international team of coaches will help you to get the most out of your creative potential. Sustainable Marketing: We will make use of our strategic network of leading marketing agencies in Finland to get professional support for our storytelling projects. You will learn to produce attractive story content that inspires international audiences to engage in sustainable consumption. Digital Storytelling: At Krea Spring School, you get to develop hands-on experience in sustainable marketing and digital storytelling in an exciting and creative learning environment. You will craft an inspirational customer experience story for a client company as part of a multicultural team of students. Watch a Krea Spring School animated video. Coaching-based Autonomous Learning: Learning in Krea Spring School is based on self-directed reflection and information retrieval, fearless hands-on experimentation, and peer-to-peer learning in teams, making use of coaching-based support along the way.

Literature
tbd

Internationality (content-related)
Multicultural Teamwork: You will become part of a fun, creative, and multicultural bunch of students from Haaga-Helia and our partner universities abroad. You will be sharing skills and knowledge in teams, solving sustainable marketing challenges together, and supporting each other at various stages of the creative process. The course takes place in Helsinki from 13-17 May 2024.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Project work (team task, 60 %) Reflection paper (individual task, 40 %; 15 pages, due at the end of the German lecture period)	The entire learning contents and competence profiles are assessed by way of the aforementioned examination forms

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

International Summer School on Sustainability

Classification	Module ID	Kind of Module		ECTS
	BESU	Elective		5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer / Winter Semester	*Approx. 10 from study programme DTM, approx. 30 in total* *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Julia Heigl	Prof. Dr. Julia Heigl and other

Prerequisites*

Online application incl. a motivation letter, details available from module convenor

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Lectures, guided intercultural team work	Contact time: 60h Self-study: 90h Total workload: 150h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

This 'International Summer School on Sustainability' has an equal focus on theory and practice. It involves 30 international students, 2 companies, 2 professors, several experts on sustainability, and key skills for project, and teamwork, and a multitude of advisors and helpers. We will come together to learn, experience, share, and implement sustainability concepts. Besides working on real-life projects, and profiting from virtual and in situ input sessions, students learn to cooperate in teams, and create goal-driven solutions. We will encourage 'thinking outside the box', and looking for realistic, application-oriented results.

Course Content

Acquisition and application of specific knowledge on sustainability and related concepts
Intercultural competence and working in teams

Input sessions: virtual (to be watched in preparation of or during the project work) and in situ
Project sessions with internal and external coaches
Social activities

Literature

Will be provided

Internationality (content-related)

Multicultural participants, internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Module work (ModA)	• Pre-assignment (online test, videos --> individual task, 30 %) • Project work (team task, 50 %) • Reflection paper (individual task, 20 %)	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

International Retail Innovation Challenge

Classification	Module ID	Kind of Module	ECTS
	BERC	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer Semester	*Approx. 5 from study programme DTM, approx. 30 in total* *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Julia Heigl	Marc Clerx and others

Prerequisites*

Formal application to Module Convenor; details available from Module Convenor.

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Lectures, guided intercultural team work	Contact time: 60h Self-study: 90h Total workload: 150h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

During the course, the participants develop competencies in collaborative autonomous learning, multicultural teamwork using English as a lingua franca, multi-stakeholder co-creation, design thinking, and pitching.

Course Content

"The International Retail Innovation Challenge" is a blended course offering a transnational learning, teaching, and training event that consistes of an online module and an in-person intensive week of 3 ects held in March 2025 in an international European location. The project will be to create an omni-channel concept that has the potential to transform the commissioning company into the future. The project will be carried out in multicultural virtual and in-person project teams of 4-5 students.

Literature

Will be provided

Internationality (content-related)

Multicultural participants, internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Module work (ModA)	• Project work (team task, 60 %) and additional tasks to acquire 5 ECTS; details available from organizers	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Social Entrepreneurship Project

Classification	Module ID	Kind of Module	ECTS
	BESE	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester	*Approx. 5 from study programme DTM, approx. 30 in total* *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Julia Heigl	Marc Clerx and others

Prerequisites*

Formal application to Module Convenor; details available from Module Convenor.

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Lectures, guided intercultural team work	Total workload: 150h

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Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

During the course, the participants develop competencies in collaborative autonomous learning, multicultural teamwork using English as a lingua franca, multi-stakeholder co-creation, design thinking, and pitching.

Course Content

The Social Entrepreneurship Project is a blended course that consists of an online module and an in-person intensive week of 3 ects held from **End of October 2024** in Antwerp.
Take on the social entrepreneurial challenge in a multidisciplinary & intercultural team. The project will be carried out in multicultural virtual and in-person project teams of 4-5 students.

Literature

Will be provided

Internationality (content-related)

Multicultural participants, internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Module work (ModA)	- Project work (team task, 60 %) - Reflection paper (individual task, 40 %; 15 pages, due at the end of the German lecture period)	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

International Short Stay

Classification	Module ID	Kind of Module	ECTS
	BEST	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
tbd	English	One Semester	Depending on availability	30 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Julia Heigl	respective professor hosting the intensive week

Prerequisites*

Application, organization and participation is entirely up to the participant. Whether a specific course of programme is benefiting the overall learning objectives and therefore suitable for the DTM study programme **must be coordinated in advance / prior to participation with the module convenor.**

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Depending on the respective program	150h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Acquisition and application of specific knowledge relevant to the fields of digital technology and/or management
International team work
Intercultural competence

Course Content

Depending on the type of intensive week

The following courses might be offered (please contact module convenor):
International Week @ Edutus University in Budapest from 7-12 April
EASM student week in Madrid on Sportsmarketing

Literature

Will be provided

Internationality (content-related)

Multicultural participants, internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Module work (ModA)	In case of 3 ECTS PROGRAM: 60% project work and presentation, 40% reflection paper (15 pages) to be handed in at the end of lecture period to j.heigl@oth-aw.de In case of 5 ECTS PROGRAM: project work and presentation Details will be provided by the respective lecturer and module convenor	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Digital Business and Information Systems: A Managerial Approach

Classification	Module ID	Kind of Module	ECTS
	BEDB	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Online (vhb)	English	One Semester	Summer and Winter Semester	30 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Markus Westner (vhb, OTH Regensburg)	Prof. Dr. Markus Westner (vhb, OTH Regensburg)

Prerequisites*

Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration.
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Online (vhb)	150h

Description of Qualifications

The course "Digital Business and Information Systems: A Managerial Approach" is designed to teach students essential aspects of business information systems from a managerial approach. Students will learn conceptual principles and practical guidelines on how to "digitize" a company and its business model. A managerial perspective is chosen which is of interdisciplinary nature and includes relevant aspects of other disciplines such as strategic management, marketing, supply chain management, operations and HR management in addition to business informatics.

Course Content

Course structure
A. INTRODUCTION
1.Introduction to digital business
2.Opportunity analysis for digital business
3.Digital business infrastructure management
4.Key issues in the digital environment
B. STRATEGY AND APPLICATION
5.Digital business strategy
6.Supply chain and demand
7.Digital marketing
8.Customer relationship management
C. IMPLEMENTATION
9.Digital product and service design
10.Digital transformation management

Literature

Will be provided

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Written exam	Details will be provided by the respective lecturer. Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Basic Sustainability

Classification	Module ID	Kind of Module	ECTS
	BEBS	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One Semester	Depending on availability	Depending on availability

Module Convenor	Instructor
Prof. Dr. Robert Feicht (vhb, TH Deggendorf)	Prof. Dr. Robert Feicht (vhb, TH Deggendorf)

Prerequisites*

None. Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration.
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Guided project work	Contact time/coaching: 60 h Self-study and project work: 90 h Total workload: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

The consistent overstepping of planetary boundaries by humans is the cause of many environmental problems and social tensions regionally, globally and between generations. For sustainable development in the sense of a fair distribution of resources, an interdisciplinary approach to solutions and the consideration of the interrelationships of social, ecological and economic factors and actors are indispensable. The course "Basics Sustainability" teaches the most important sustainability models and analysis methods for sustainable development. From environmental and resource economics, basic methods for a fair distribution of environmental goods as well as environmental policy instruments and tools for sustainable spatial design are presented. With regard to materiality, the goal is the use of renewable raw materials for the production of materials and products, the recycling or pollutant-free landfilling of existing products and materials, and the optimisation of natural processes from a material and energy point of view. Against the background of climate change, students learn about current technologies and developments and assess measures in the field of renewable energy systems in the context of grid expansion, energy distribution and storage technologies.

Course Content

Course structure
1. General principles of sustainability
2. Economic framework for sustainability
3. Materiality and sustainability
4. Energy and sustainability

Literature

Communicated by lecturer.

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Written Exam (Kl90)	Details will be provided by the respective lecturer Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The group project is used to test the practical learning content and competence profiles, including teamwork and presentation skills.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Future Skill

Classification	Module ID	Kind of Module	ECTS
	BESP	Selective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
tbd	English	One Semester	Depending on availability	30 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Julia Heigl	respective professor offering the soft skill module

Prerequisites*

Application, organization and participation is entirely up to the participant.
Students are recommended to check the course catalogue of vhb (https://kurse.vhb.org/VHBPOR- TAL/kursprogramm/kursprogramm.jsp).
Also, participation in modules of other study programs at OTH may be possible.
Whether a specific course of programme is benefiting the overall learning objectives and therefore suitable for the DTM study programme must be coordinated in advance with the module convenor.

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Depending on the respective program	150h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Acquisition or deepening of specific future skills and competencies not covered by a dedicated module

Course Content

Depending on the type of class

Literature

Will be provided

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Depending on the course chosen	Details will be provided by the respective lecturer	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

MINT Skill

Classification	Module ID	Kind of Module	ECTS
	BEMS	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
tbd	English	One Semester	Depending on availability	30 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Julia Heigl	respective professor offering the soft skill module

Prerequisites*

Application, organization and participation is entirely up to the participant.
Students are recommended to check the course catalogue of vhb (https://kurse.vhb.org/VHBPOR- TAL/kursprogramm/kursprogramm.jsp).
Also, participation in modules of other study programs at OTH may be possible.
Whether a specific course of programme is benefiting the overall learning objectives and therefore suitable for the DTM study programme must be coordinated in advance with the module convenor.

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Depending on the respective program	150h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Acquisition or deepening of specific MINT skills and competencies not covered by a dedicated module

Course Content

Depending on the type of class

Literature

Will be provided

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1)]	Scope/duration including weighting [*2)]	Learning Objectives/Competencies to be Assessed
Depending on the course chosen	Details will be provided by the respective lecturer	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

[*1)] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2)] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Green Office

Classification	Module ID	Kind of Module	ECTS
	BEGO	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Partly face-to-face (optionally at Amberg-Weiden), partly online	English	One Semester	Summer and Winter Semester	10 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Julia Heigl	Wolfgang Voigt

Prerequisites*

high degree of self-organization and self-motivation, application with module convenor and lecturers

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Seminar-based project teaching with self-study units	Contact time: 40 h Self-study/follow-up: 80 h Exam preparation: 30 h Total time: 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Expertise:
- The students know and understand the task and function of a Green Office and are aware of the importance and necessity of sustainability measures at the university.
- They will learn and be able to apply knowledge of idea generation and agile project management.
- The students know and understand the task and function of a Green Office and are aware of the importance and necessity of sustainability measures at the university.

Methodological competence:
- Students use methods to generate ideas (including design thinking).
- They apply agile project management methods.

Personal competence (social competence and self-competence):
- Development and promotion of sustainable thinking and implementation of independently identified measures: Students deal with the topic of sustainability and reflect on their interaction with the environment.
- In addition, they network with sustainability departments at the university such as the climate protection manager or the Institute for Sustainability and Ethics.
- In small interdisciplinary groups, they identify approaches for implementable sustainability measures at the university.
- In this context, they familiarize themselves with agile project management approaches and discuss team processes in a constructive and solution-oriented manner.
- Students use presentation techniques

Course Content

Introduction to sustainability
Idea generation
Project management
Identification and developing of a sustainable activity at OTH Amberg-Weiden

Literature

Peipe, S.: Crashkurs Projektmanagement, 9. Aufl., Haufe Group, München.
ESDGs! MOOC: https://esdgs.erasmus.site/de/open-online-course/
Current scientific publications and studies for the topics to be worked on

Internationality (content-related)

The content covered is largely relevant worldwide. Parts of the lecture materials are available in English and in various languages.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[1]	Scope/duration including weighting [2]	Learning Objectives/Competencies to be Assessed
Project work (Pr)	Project Work, 100 %	The above covered competencies are checked in the coursework.

[1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

[2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Data Collection Methods in the Social and Behavioral Sciences

Classification	Module ID	Kind of Module	ECTS
	BEDC	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One semester	Depending on availability	Depending on availability

Module Convenor	Instructor
Prof. Dr. Klaus Moser Friedrich-Alexander-Universität Erlangen-Nürnberg	Prof. Dr. Klaus Moser Friedrich-Alexander-Universität Erlangen-Nürnberg

Prerequisites*

None. Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration.
*Note: please also observe the prerequisites according to examinations regulations law in the current version of the SPO.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Please see detailed vhb course description	Please see detailed vhb course description

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Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

This course provides students with a broad overview of data collection methods in the social and behavioral sciences. The goal is to prepare students to write a thesis in which the collection and/or evaluation of primary data on individuals, groups, or organizations plays a key role. Students will therefore learn where to find these methods and how to evaluate them, but will also gain insight into their application in scientific research. Furthermore, examples from HR, organizational psychology and consumer research will prepare them for using the methods appropriately in their future careers.

Course Content

I. BACKGROUND
I.1 Basics of data collection in the social and behavioral sciences
I.2 The process of empirical research
II. DATA COLLECTION METHODS IN THEORY AND PRACTICE
II.1 Interviewing I
II.2 Interviewing II
II.3 Rating, judging, comparing
II.4 Psychological testing I
II.5 Psychological testing II
II.6 Observation and simulation
II.7 Unobtrusive measures
II.8 Physiological measures
III. LEGAL AND ETHICAL ASPECTS: HANDLING DATA RESPONSIBLY

Literature

See vhb

Internationality (content related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form [1]	Scope/duration including weighting [2]	Learning objectives/competencies to be assessed
Written examination and case study elaboration	Written examination and case study elaboration Only the long version of the course (awarded as 6 ECTS) may be recognised as a Basic Elective. Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

[1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Innovation & Entrepreneurship for Better Futures: impACTup!

Classification	Module ID	Kind of Module	ECTS
	BEIE	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One semester	Depending on availability	Depending on availability

Module Convenor	Instructor
Prof. Dr. Jelena Spanjol Ludwig-Maximilians-Universität München	Prof. Dr. Jelena Spanjol Ludwig-Maximilians-Universität München

Prerequisites*
None. Application, organization and participation is entirely up to the participant. Students are recommended to consult with the Head of the study programme prior to registration. ***Note: please also observe the prerequisites according to examinations regulations law in the current version of the SPO.**

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Please see detailed vhb course description	Please see detailed vhb course description

Description of Qualifications
After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies: Please see detailed vhb course description

Course Content

This course introduces entrepreneurship as an effective tool for implementing sustainable innovations. You will learn how to tackle the most pressing societal and environmental challenges of our time. In the interdisciplinary sessions that are facilitated by professors from multiple faculties at LMU Munich, University of Augsburg, and the CDTM (Center for Digital Technology and Management), you will learn about impact as a guiding principle for entrepreneurship. We discuss which stakeholders are important for entrepreneurs and how impact can be holistically achieved and measured. Thanks to interactive digital classes, you will learn how sustainable business models are developed, as well as how startups are financed and sustained in the long term. You will develop an impact-oriented mind-and skillset over the course duration, gain a new holistic perspective on value creation and destruction, be conscious of the value of impactful innovations and be able to translate theory into practice. The impact-oriented knowledge you will gain can not only be applied in your own field of study or in your professional career, but also in your daily life.

Course structure
1. Positively impacting our world through innovating and organizing
2. Building impact-driven ventures and organizations
3. Stakeholder orientation: How to organize support
4. Impact through social value: Challenges and concepts
5. Deploying business models for social, environmental, and economic good
6. Financial valuation of a project
7. Empowering change: Fundamental low basics for impact
8. Measuring and managing impact

Literature

See vhb

Internationality (content related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form *1)	Scope/duration including weighting *2)	Learning objectives/competencies to be assessed
Study work (seminar paper & poster)	Study work (seminar paper & poster) Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Foreign Language I

Classification	Module ID	Kind of Module	ECTS
	BEL1	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
tbd	English	One Semester	Depending on availability	*There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Julia Heigl	respective lecturer offering the language course

Prerequisites*

Neither German nor English classes may be selected as Foreign Language class. Besides this, students may choose from the catalogue of the language center. For advanced students, the language modules of the TM study programme are also open. However, there is no claim to participation. In order to ensure proper fit with pre-knowledge and educational goals of the program, a**pproval of the Head of Study programme or the deputy necessary.**
After that, please register directly with the language center. https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/anmeldung/
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Depending on the respective program	150h

Description of Qualifications
Description of Qualifications
After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:
https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/modulhandbuch/.

Course Content

https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/modulhandbuch/.

Literature

https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/modulhandbuch/.

Internationality (content-related)

https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/modulhandbuch/.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1)]	Scope/duration including weighting [*2)]	Learning Objectives/Competencies to be Assessed
Depending on the course chosen	Details will be provided by the respective lecturer	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

[*1)] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2)] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Foreign Language II

Classification	Module ID	Kind of Module	ECTS
	BEL2	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
tbd	English	One Semester	Depending on availability	*There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Julia Heigl	respective lecturer offering the language course

Prerequisites*

Neither German nor English classes may be selected as Foreign Language class. Besides this, students may choose from the catalogue of the language center. For advanced students, the language modules of the TM study programme are also open. However, there is no claim to participation. In order to ensure proper fit with pre-knowledge and educational goals of the program, a**pproval of the Head of Study programme or the deputy necessary.**
After that, please register directly with the language center. https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/anmeldung/
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Depending on the respective program	150h

Description of Qualifications
Description of Qualifications
After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:
https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/modulhandbuch/.

Course Content

https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/modulhandbuch/.

Literature

https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/modulhandbuch/.

Internationality (content-related)

https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/modulhandbuch/.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form [*1)]	Scope/duration including weighting [*2)]	Learning Objectives/Competencies to be Assessed
Depending on the course chosen	Details will be provided by the respective lecturer	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

[*1)] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2)] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Specialization Electives

- Please note that this catalogue may change each semester. There is no claim to a repeated offer of a particular module. Additional electives may be offered and outlined in the catalogue in due time. -

Students are required to complete **four Specialization Electives** (Specialization Elective 1-4, **ID 6.1-6.4** as outlined in the curriculum), **5 ECTS each, for a total of 20 ECTS**. They may choose any from the following modules with the mentioned limitations and prerequisites. However, to ensure proper know-how and specialization in the selected topic, we suggest selecting possibly **all four modules from only one topical field**.

Topical Field	Specialization Electives	ID	Other programs	SWS	ECTS	Rhythm	Prerequisites* / Comments
Data Science	Data Science for Engineers (Introduction to Methods and Tools)	SED1		4	5	Winter	Successful completion of Modules 1.1-1.5
	Applied Image Processing	SED2		4	5	Summer	Successful completion of Modules 1.1-1.5 and SED1
	Industrial Applications of Data Science	SED3		4	5	Summer	Successful completion of Modules 1.1-1.5 and SED1
	The R and RStudio Environment	SED4		4	5	Summer and Winter (vhb)	Coordination with head of the study programme in advance
	Data-Driven Supply Chain Management	SED5		4	5	Summer and Winter (vhb)	Coordination with head of the study programme in advance + Successful completion of Module 1.4
Industrial Engineering and Industry 4.0	ERP Systems and Digital Transformation	SEI2		4	5	Summer and Winter (vhb)	Coordination with head of the study programme in advance + Successful completion of Modules 2.1 and 2.4
	Industry X.0 and Supply Chain Management	SEI3		4	5	Summer and Winter (vhb)	Coordination with head of the study programme in advance
	Robotik (Robotics)	SEI4	WI T19 WI-D WI Q18 WI-D IIE & IME T14	4	5	Winter	German
	SAP Anwendungsentwicklung (SAP application development)	SEI5	WI	4	5	Winter	German B2; taught in German
	Smart Factory	SEI6	IIE &IME I10	4	5	Winter	English
	Integrated Production Systems	SEI7		4	5	Summer and Winter (vhb)	Coordination with head of the study programme in advance + Successful completion of Modules 2.4 and 4.3
Digital Processes and Applications	Betriebliche Anwendungssysteme	SEP1	In future WI	4	5	Winter	Either SEP1 OR SEP2 may be taken
	Enterprise Resource Planning Systems	SEP2	In future IIE	4	5	Summer	Either SEP1 OR SEP2 may be taken
	AI-driven Business Analytics & Data-Driven Management	SEP3		4	5	Winter	Details to follow
	AI-driven Process Analytics & Intelligence	SEP4		4	5	Winter	Details to follow
	Business Application Re-Engineering	SEP5		4	5	Summer and Winter (vhb)	Coordination with head of the study programme in advance
Management	Blockchain Applications for Business	SEM1		4	5	Summer and Winter (vhb)	Coordination with head of the study programme in advance
	Business Model Innovation	SEM2	DHM VD11+ VM12; WI-W10; WI-P+D; TM-V2; TM-P; IIE&IME E10	4	5	Winter	
	Digital Marketing and eCommerce	SEM6		4	5	Winter	Successful completion of Module 3.4
	International Marketing	SEM3		4	5	Summer and Winter (vhb)	Successful completion of Module 3.4; Coordination with head of the study programme in advance
	People Analytics: Data Science for Human Resources Management	SEM4		4	5	Summer and Winter (vhb)	Successful completion of Modules 1.1-1.5; Coordination with head of the study programme in advance
	Electronic Human Resources Management	SEM5		4	5	Summer and Winter (vhb)	Coordination with head of the study programme in advance
	Digital Markets and Platforms	SEM7		4	5	Summer and Winter (vhb)	Coordination with head of the study programme in advance
	Introduction to Corporate Foresight	SEM8		4	5	Summer and Winter (vhb)	Coordination with head of the study programme in advance
Languages	German V (C1.1 Part 1)**	BEG5		4	5	Summer	German B2; module has not been chosen as Basic Elective
	German VI (C1.1 Part 2)**	BEG6		4	5	Winter	German B2; module has not been chosen as Basic Elective
Integrative	Practical Project	SEPP	IIE &IME I14	4	5	Summer and Winter	Coordination with the head of the study programme in advance
	Programming in C++	SEPC		4	5	Summer and Winter (vhb)	Coordination with the head of the study programme in advance

*Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.
** The detailed description of the German courses (as well as the voluntary options for obtaining UNIcert® certificates) can be found in the Module Handbook of the Language Center at https://www.oth-aw.de/international/internationales-profil/sprachenzentrum/modulhandbuch/.

Data Science for Engineers (Introduction to Methods and Tools)

Classification	Module ID	Kind of Module	ECTS
	SED1	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter	30 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Thomas Geigenfeind	Prof. Dr. Thomas Geigenfeind

Prerequisites*
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Seminaristic lecture	150h (60h contact time, 90h self-study)

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- Students have an overview of the data science and machine learning domain
- Students can assess what problems can be tackled with data science and machine learning
- Students know the fundamentals of loading, analyzing and visualizing datasets from various sources
- Students can implement simple machine learning pipelines with the most common Python libraries
- Students learn to find their own solutions, develop methods for solving problems, discuss and overcome issues, and present results through supervised but independent programming exercises

Course Content

- Fundamentals of Python programming for statistics and data science
- Introduction to data analysis (ETL, data selection, visualization,…)
- Selection of traditional machine learning tasks and respective algorithms, including but not limited to linear regression, classification, cluster analysis,…
- Introduction to neural networks
- Application of machine learning models to real-world engineering applications

Literature

- Python for Data Analysis (3rd edition), Wes McKinney, O'Reilly, 2022
- Machine Learning with PyTorch and Scikit-Learn, Sebastian Raschka, Packt, 2022
- Data Science from Scratch (2nd edition), Joel Grus, O'Reilly 2019
- Machine Learning with Python Cookbook, Chris Albon, O'Reilly, 2018

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Multiple equally weighted programming case studies	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Applied Image Processing

Classification	Module ID	Kind of Module	ECTS
	SED2	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer	30 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Thomas Geigenfeind	Prof. Dr. Thomas Geigenfeind

Prerequisites*

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Seminaristic lecture	150h (60h contact time, 90h self-study)

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- Students can assess what problems can be tackled with image processing and computer vision
- Students know the basics of image processing with Python and OpenCV
- Students can implement a collection of fundamental computer vision tasks with the most common Python libraries
- Students learn to find their own solutions, develop methods for solving problems, discuss and overcome issues, and present results through supervised but independent programming exercises

Course Content

- Fundamental concepts of image processing (channels, datastructures, colorspaces,...)
- Image transformations
- Image restoration/enhancement (spatial filtering, denoising, …)
- Introduction to Convolutional Neural Networks and their applications for image related tasks
- Classification of image contents
- Object detection
- Selected real-world applications

Literature

- Hands-On Image Processing with Python, Dey Sandipan Dey, Packt, 2018
- Practical Machine Learning and Image Processing, Himanshu Singh, Apress, 2019
- OpenCV with Python By Example, Prateek Joshi, Packt, 2015

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1)]	Scope/duration including weighting [*2)]	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Multiple equally weighted programming case studies	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

[*1)] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2)] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Industrial Applications of Data Science

Classification	Module ID	Kind of Module	ECTS
	SED3	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Summer	30 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Thomas Geigenfeind	Prof. Dr. Thomas Geigenfeind

Prerequisites*

* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Seminaristic lecture	150h (60h contact time, 90h self-study)

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- Students have an overview of the data science and machine learning domain
- Students can assess what problems can be tackled with data science and machine learning
- Students learn to find their own solutions, develop methods for solving problems, discuss and overcome issues through supervised but independent programming exercises
- Students learn to give convincing presentations of their results

Course Content

- Overview of data science and its significance in the industrial sector
- Industry process frameworks for structuring data science related projects
- Typical data sources, storage solutions and ETL pipelines
- Predictive Maintenance and Quality Control
- Exploratory Data Analysis case studies on assorted samples of industry problems (selection of e.g. sales data analysis, customer segmentation, portfolio analysis, supply chain optimization,…) including typical features/KPIs, relevant algorithms (e.g. for time-series analysis), report generation and result presentation

Literature

- Data Science Concepts and Techniques with Applications (2nd edition), Usman Qamar, Springer, 2023
- Data Science for Business, Foster Provost, O'Reilly, 2013

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Multiple equally weighted programming case studies	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

The R and RStudio Environment

Classification	Module ID	Kind of Module	ECTS
	SED4	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One Semester	Depending on availability	Depending on availability

Module Convenor	Instructor
Prof. Dr. Klaus Moser (Universität Erlangen-Nürnberg)	Prof. Dr. Klaus Moser (Universität Erlangen-Nürnberg)

Prerequisites*

None. Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration.
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Please see detailed vhb course description	150h

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Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

R is a programming language with statistical computing and data visualization functions. It has established itself as a workhorse in various branches of science due to its high modularity and package system, and the high-quality graphics it can produce with relative ease. While extremely powerful, R in itself is hard to master because its graphical interface is rudimentary. RStudio thrives to solve this problem by offering a development environment for R, with a console, syntax-highlighting editor that supports direct code execution, and tools for plotting, history, debugging and workspace management. This course offers beginners an easy, step-by-step introduction to the R and RStudio Environment with a gentle learning curve. It covers topics such as data import, basics of data handling as well as an introduction to data visualization and communication.

Course Content

      1. EXPLORATION OF THE R ECOSYSTEM
      2. DATA HANDLING
      3. VISUALIZATION
      4. MODELING
      5. COMMUNICATING THE RESULTS

Literature

      https://kurse.vhb.org/VHBPORTAL/kursprogramm/kursprogramm.jsp?kDetail=true&COURSEID=14174,74,1456,1

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
KL60 (written exam, 60 minutes)	Written exam, 60 minutes Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Data-Driven Supply Chain Management

Classification	Module ID	Kind of Module	ECTS
	SED5	Elective	5 ECTS

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One semester	Depending on availability	Depending on availability

Module Convenor	Instructor
Prof. Dr. Richard Pibernik (vhb, Julius-Maximilians-Universität Würzburg)	Prof. Dr. Richard Pibernik (vhb, Julius-Maximilians-Universität Würzburg)

Prerequisites*

The following courses are a pre-requisite for this course
- Statistics and Quantitative Methods
- Data Science for Engineers (Introduction to Methods and Tools)

Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration
*Note: please also observe the prerequisites according to examinations regulations law in the current version of the SPO.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Please see detailed vhb course description	150h

Description of Qualifications

After completing this module successfully, students will have the following professional, methodological and personal competences (social and self-competence):

This course provides students with a very practical, hands-on introduction to Data-Driven Supply Chain Management (DSCM) using Machine-Learning (ML) techniques. Based on a specific example and dataset from practice, students will learn how simple and more advanced ML techniques (e.g. Neural Networks, Random Forests) can support decision makers in using extensive data to come up with better decisions in Supply Chain Management.

Course Content

The course is structured around a single case example and a single set of data and will gradually introduce participants to fundamental and more advanced concepts of DSCM. In particular, students will learn how to build, employ, and evaluate simple and more advanced ML-models that can be directly used in practice. The individual lectures will introduce participants to the (Python-) code of the relevant ML-models, explain the workings of the code and interpret the outcomes from a managerial perspective. Students will be able to observe how different ML-models can be employed, how they make use of the data available to the decision maker, where they fail and where they provide useful decision support. The course is designed in such a way that students do not need prior experience in coding in Python.
Session 1: Introduction to Data Driven Supply Chain Management
Session 2: The Data-driven Newsvendor Problem
Session 3: The Linear Regression Newsvendor
Session 4: The Deep Learning Newsvendor
Session 5: Using Decision Trees and Random Forest
Session 6: An Outlook on Data Driven Supply Chain Management

Literature

See vhb

Internationality (content related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form *1)	Scope/duration including weighting *2)	Learning objectives/competencies to be assessed
written examination	written examination Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

ERP Systems and Digital Transformation

Classification	Module ID	Kind of Module	ECTS
	SEI2	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One Semester	Winter and Summer	Depending on availability

Module Convenor	Instructor
Prof. Dr. Alexander Dobhan (vhb, Technische Hochschule Würzburg-Schweinfurt)	Prof. Dr. Alexander Dobhan (vhb, Technische Hochschule Würzburg-Schweinfurt)

Prerequisites*

Successful completion of Modules:
- IoT Technology
- Communication Technology

Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration.
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Please see detailed vhb course description	150h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

The digital transformation is changing work processes and forms of organization (see VDI 2013), which means that companies need to change their competence profiles (Gerholz 2018). Studies indicate that the ability to solve problems in the environment of operational processes and the central application systems (ERP systems), the understanding of new technologies (including the use of IoT, cloud computing, and AI), and monitoring activities (e.g., analysis of the operational databases resulting from the processes; data analytics) are important (IW 2016).

This course addresses these needs and introduces the central, operational application systems (ERP systems). After a theoretical introduction to the topic "ERP Systems" and "Business Processes", the learning environment offers participants the opportunity to deepen their knowledge of two ERP systems (Infor VISUAL ERP and Microsoft Dynamics NAV) and to consolidate the theoretical foundations through practical experience. In the subsequent case studies "IoT", "Mobile ERP", and "Data Extraction", participants are given the opportunity to delve into current key topics in the field of business digitization processes. As an integrating data hub, ERP systems are the central starting point for implementing these digital trends.

Course Content

Introduction to the field of ERP systems - LEA's DREAM: From industrialization to digitalization
- ERP basic knowledge – THEORY
- ERP application - INFOR VISUAL ERP
- ERP application - MICROSOFT DYNAMICS NAV
- Case study: IOT
- Case study: MOBILE ERP
- Case Study: DATA EXTRACTION

Literature

See vhb

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form *1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Practical elaboration in the system (50 %) and case study elaboration (50 %) Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Industry X.0 and Supply Chain Management

Classification	Module ID	Kind of Module	ECTS
	SEI3	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One Semester	Winter and Summer	Depending on availability

Module Convenor	Instructor
Prof. Dr.-Ing. Evi Hartmann (vhb, Friedrich-Alexander-Universität Erlangen-Nürnberg)	Prof. Dr.-Ing. Evi Hartmann (vhb, Friedrich-Alexander-Universität Erlangen-Nürnberg)

Prerequisites*

Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration.
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	The contents are presented in learning videos and slides.	150h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

The aim of this course is to impart the basics of operations and supply chain management related to the industrial transformations. Starting with basics such as supply chain planning, supply chain processes, and supply chain strategies with continuous reference to digitization, the focus shifts to Industry 4.0 and the associated principles, technologies, and IT systems. Moreover, the topics sustainability and Industry 5.0 are covered.

The course consists of ten lectures, which are enriched by guest lectures, case studies, additional readings as well as exercises and self-assessments. As the entire lecture, the readings, the additional material and the exam is in English, proficiency in German is not necessary.

Course Content

1. Theoretical foundations of operations, supply chain management, and digital transformation
2. From history to current trends and developments
3. Supply chain strategy and dynamics
4. Supply chain processes
5. Supply chain planning
6. Principles of Industry 4.0
7. Technologies in operations and supply chain management
8. IT systems in supply chains
9. Sustainable Industry 4.0
10. Industry 5.0

Literature

See vhb

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form *1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Written Exam	Written exam Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Robotik
Robotics

Zuordnung zum Curriculum Classification	Modul-ID Module ID	Art des Moduls Kind of Module	Umfang in ECTS-Leistungspunkte Number of Credits
	SEI4	Wahlpflichtmodul/Vertiefung	5

Ort Location	Sprache Language	Dauer des Moduls Duration of Module	Vorlesungsrhythmus Term/frequency	Max. Teilnehmerzahl Max. Number of Participants
Weiden	Deutsch	Einsemestrig	Wird regelmäßig im Wintersemester angeboten	24

Modulverantwortliche(r) Module Convenor	Dozent/In Instructor
Prof. Dr. Manfred Beham	Prof. Dr. Manfred Beham

Voraussetzungen*
Prerequisites

- Grundlegende Kenntnisse der Vektorgeometrie (Mathematik) und Grundlagen der Programmierung (Informatik I)
- Interesse an Robotik und die Bereitschaft zur Mitarbeit an einem Projekt in der Kleingruppe

*Hinweis: Beachten Sie auch die Voraussetzungen nach Prüfungsordnungsrecht in der jeweils gültigen SPO-Fassung.

Verwendbarkeit Availability	Lehrformen Forms of Instruction	Workload
Das Modul ist Teil der Modulgruppe „Specialization Electives" des Bachelor-studiengangs Digital Technology and Management sowie „Technik" in der Vertiefungsrichtung „Digitalisierung in Produktion und Logistik" des Bachelorstudiengangs Wirtschaftsingenieurwesen. Die Verwendbarkeit in anderen Studiengängen der Hochschule ist im Einzelfall zu prüfen.	Seminaristischer Unterricht, Übungen am PC mit der Stäubli-Entwicklungs-umgebung und –Simulator, Praktikum im Labor	Seminaristischer Unterricht: 30 h Übungen/Eigenstudium: 30 h Labor mit Anleitung: 30 h Projektarbeit: 60 h Gesamtaufwand: 150 h

Lernziele / Qualifikationen des Moduls
Nach dem erfolgreichen Absolvieren des Moduls verfügen die Studierenden über die folgenden fachlichen, methodischen und persönlichen Kompetenzen: **Fachkompetenz:** Die Studierenden kennen den Aufbau und die Funktionsweise eines Industrieroboters. Sie können Bewegungsabläufe in verschiedenen Koordinatensystemen beschreiben und transformieren. Sie kennen die grundlegen Konzepte der Programmierung, insbesondere die in der Robotik nötigen Elemente der Programmflusssteuerung und des Multitaskings. Sie kennen die Sicherheitsrichtlinien im Umgang mit dem Roboter und können diesen mit Hilfe des Handbediengerätes steuern**.** **Methodenkompetenz:** Sie können eine VAL3-Applikation in der Stäubli-Entwicklungsumgebung konzipieren, implementieren und simulieren. Dabei sind sie in der Lage, einen komplexen Vorgang im Sinne einer Top-Down-Strategie zu modularisieren. Programmierbare Steuerungen oder ein Bildverarbeitungssystem können in die Gesamtapplikation eingebunden werden. **Persönliche Kompetenz (Sozialkompetenz und Selbstkompetenz):** Teamarbeit und Selbstorganisation werden im Rahmen der Projektarbeit gefördert. Die Studierenden können grundlegende Methoden des Projektmanagements innerhalb ihres Teams anwenden. Sie müssen Ergebnisse und Zwischenergebnisse präsentieren.

Inhalte der Lehrveranstaltungen Course Content
• Sicherheitseinweisung • Der Roboter im Überblick • Das Handbediengerät • Orientierung/Koordinatensysteme/Kinematik • VAL3 Applikation/Programmierung • Multitasking • Einführung in die Bildverarbeitung

Lehrmaterial / Literatur Literature
Weber, W.: Industrieroboter: Methoden der Steuerung und Regelung, München, Wien: Hanser, 2002 Stäubli: Referenzanleitung VAL3. Version 7.0, © Stäubli Faverges 2015 Beham Manfred: Vorlesungsmanusskript in englischer Sprache

Internationalität (Inhaltlich) Internationality
Die Grundlagen der Robotik können weltweit in allen industriellen Fertigungsbereichen eingesetzt werden und sind auch auf andere Robotersysteme übertragbar. Unterrichtsmaterialien und Referenzhandbücher sind in Englisch.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)		
Prüfungsform*1)	**Art/Umfang inkl. Gewichtung*2)**	**Zu prüfende Lernziele/Kompetenzen**
PrA Projektarbeit	Projekt-Thema: Realisierung einer Robotersteuerung Durchführung in der Gruppe (3 – 4 Personen) Zwischenbericht 15 – 20 min. (30% Gewichtung) Schriftliche Ausarbeitung 15 – 25 Seiten (70% Gew.)	Über die Projektarbeit werden nahezu alle o.g. Kompetenzen geprüft. Insbesondere praktische Fähigkeiten und die Methodenkompetenz werden durch eine erfolgreiche Projektarbeit bewiesen.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

SAP-Anwendungsentwicklung für Logistik 4.0

SAP Application Development for Digital Logistics

Zuordnung zum Curriculum Classification	Modul-ID Module ID	Art des Moduls Kind of Module	Umfang in ECTS-Leistungspunkte Number of Credits
	SEI5	Wahlpflichtmodul/Vertiefung	5

Ort Location	Sprache Language	Dauer des Moduls Duration of Module	Vorlesungsrhythmus Term/frequency	Max. Teilnehmerzahl Max. Number of Participants
Weiden	Deutsch	Einsemestrig	Wird regelmäßig im Wintersemester angeboten	25

Modulverantwortliche(r) Module Convenor	Dozent/In Instructor
Prof. Dr.-Ing. Günter Kummetsteiner	M.A. Christoph Hammer

Voraussetzungen*
Prerequisites

Sprachkenntnisse Deutsch Niveaustufe B2
Dieser Kurs ist gezielt auf „Nicht-Informatiker" ausgerichtet. Die Teilnehmer(innen) sollten allerdings über folgende Kenntnisse verfügen:
- Grundkenntnisse in der Softwareentwicklung mit mind. einer Programmiersprache

*Hinweis: Beachten Sie auch die Voraussetzungen nach Prüfungsordnungsrecht in der jeweils gültigen SPO-Fassung.

Verwendbarkeit Availability	Lehrformen Forms of Instruction	Workload
Das Modul ist Teil der Modulgruppe „Specialization Electives" des Bachelorstudiengangs Digital Technology and Management sowie Teil der Modulgruppe "Interdisziplinär" in der Vertiefung „Digitalisierung in Produktion und Logistik" des Bachelorstudiengangs Wirtschaftsingenieurwesen. Die Verwendbarkeit in anderen Studiengängen der Hochschule ist im Einzelfall zu prüfen.	Seminaristischer Unterricht mit Übungen	Gesamtaufwand: 150 h

Lernziele / Qualifikationen des Moduls

Nach dem erfolgreichen Absolvieren des Moduls verfügen die Studierenden über die folgenden fachlichen, methodischen und persönlichen Kompetenzen:

Das Ziel ist der Erwerb grundlegender Kenntnisse in Konzeption und Entwicklung moderner SAP-Anwendungen mit ABAP Objects.

Fachkompetenz:
- Die Studierenden kennen das Grundkonzept und die Syntax der Programmiersprache ABAP bzw. ABAP Objects und können diese anwenden.
- Die Studierenden kennen Besonderheiten, Beschränkungen und Möglichkeiten der Anwendungsentwicklung im ERP-System SAP.

Methodenkompetenz:
- Die Studierenden können einfache Anwendungen mit ABAP bzw. ABAP Objects selbständig entwerfen, im SAP-System implementieren und testen.
- Sie können die dazu erforderlichen Entwicklungswerkzeuge anwenden.

Persönliche Kompetenz (Sozialkompetenz und Selbstkompetenz):
- Im Rahmen der betreuten Programmierübungen lernen die Studierenden ihre erstellten Lösungen zu erläutern, deren Qualität und mögliche Lösungsalternativen zu diskutieren und die persönlich angewandte Problemlösungsstrategie kritisch zu reflektieren.

Inhalte der Lehrveranstaltungen
Course Content

Die Lehrveranstaltung bietet einen Überblick über Grundlagen und Potentiale der Programmiersprache ABAP bzw. ABAP Objects.
Als Basis werden zunächst folgende Themen behandelt:
- Navigation und Grundkonzepte in SAP ERP
- Moderne Entwicklungsumgebungen Eclipse und ABAP Workbench
- Modularisierung mit ABAP, Datentypen und DataDictionary
- Datenbankzugriffe mit SQL
- Erstellung einfacher Datenauswertungsfunktionen
- Dialogprogrammierung mit ABAP-Dynpro's
- Debuggen von ABAP-Coding
- Erweiterte objektorientierte Techniken

Um abschließend das Nutzenpotential der ABAP-Anwendungsentwicklung im betrieblichen Umfeld zu verdeutlichen, haben die Teilnehmer(innen) am Ende des Kurses die Möglichkeit z.B.
- einen ERP-Dialog aus dem SAP-Modul Logistik individuell anzupassen
- einen spezifischen Report in die SAP-Oberfläche einzubinden
- o.ä.
Zudem werden im Laufe des Kurses weitere ABAP-Anwendungen vorgestellt.

Lehrmaterial / Literatur
Literature

- OTH-spezifische Schulungsunterlagen

Internationalität (Inhaltlich)
Internationality
Viele große, weltweit agierende Unternehmen setzen branchenübergreifend SAP-Software ein.
Die behandelten Inhalte sind zu großen Teilen weltweit von Relevanz.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Prüfungsform[*1]	Art/Umfang inkl. Gewichtung[*2]	Zu prüfende Lernziele/Kompetenzen
Klausur (Kl)	Schriftliche Prüfung; Dauer 90 Min. Teilnahme an der Klausur ist nur mit gültigen kursspezifischen Zugangsdaten zum SAP-System zulässig. Diese werden zu Beginn des jeweiligen Vorlesungssemesters vergeben. Hinweis (unabhängig von der regulären Mindestpunktzahl für das Bestehen der WPM-Prüfung): Bei regelmäßiger Teilnahme (max. 2 Fehltermine) und Erreichen von mind. 65% der Gesamtpunktzahl der Prüfung wird zusätzlich ein Zertifikat inkl. Logo der SAP UA ausgestellt. (Muster siehe ergänzende Kursbeschreibung unter https://oth-aw.de/sap-factory)	Über die schriftliche Prüfung werden die grundlegenden Elemente der o.g. Kompetenzen abgeprüft.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Smart Factory

Classification	Module ID	Kind of Module	ECTS
	SEI6	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester	30 from all study programs *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Kris Dalm	Prof. Dr. Kris Dalm

Prerequisites*
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	details to be specified in the first semester the module is taught	150h, details to be specified in the first semester the module is taught

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

In this module, students develop the Weiden Smart Factory by conducting several projects within the factory. Students define projects and apply the visited lectures to conduct them, e.g., Project Management, Industrial Engineering or Communication Technology.

Projects can be (selection):
- Human-Robot-Interaction and mobile/stationary robot applications
- Assembly applications and worker assistant systems
- Predictive maintenance procedures
- Augmented/Virtual Reality applications
- Communication technology and automation applications (e.g., for training purposes)
- Logistics application (e.g., AGVs, RFID, 5G)

Technologies and methods that can be applied (selection):
- Machine Learning algorithms (both vision and data driven)
- Digital technologies (e.g., AR/VR)
- Automation programming
- Data mining
- Human-Robot-Interaction
- Software/hardware development

Course Content

- Defining and structuring of Smart Factory applications
- Project Management of defined project
- Conceptual engineering (design, CAD, PCB layout, etc.)
- Conduction phase (programming, assembling, etc.)
- Test/validation phase

Literature

- Wengle, M., Dalm, K., Sahuji, R. (2023). Implementation of a Prototype Production Line based on concept of Industrial Digitalization in an existing Learning Factory environment. Reutlingen (13th Conference on Learning Factories - CLF 2023). Available at SSRN: https://ssrn.com/abstract=4456952
- Dalm, K. and Sahuji, R. (2021). Industrial Digitalization for Society - A Learning Factory Concept based on Four Pillars. Graz (11th Conference on Learning Factories - CLF 2021). Poster Publication. Available at SSRN: http://dx.doi.org/10.2139/ssrn.3858347

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form *1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Module work (ModA)	Project Work in Groups; each group must present their project result in a written format and a final presentation	The group project is used to test the practical learning content and competence profiles, including teamwork and presentation skills.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Integrated Production Systems

Classification	Module ID	Kind of Module	ECTS
	SEI7	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One semester	Depending on availability	Depending on availability

Module Convenor	Instructor
Prof. Dr.-Ing. Jörg Franke (vhb, Friedrich-Alexander-Universität Erlangen-Nürnberg)	Prof. Dr.-Ing. Jörg Franke (vhb, Friedrich-Alexander-Universität Erlangen-Nürnberg)

Prerequisites*

The following courses are a pre-requisite for this course:
- Communication Technology
- Industrial Engineering

Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	The contents are presented in learning videos and slides. Additionally, students have to work on practical case studies.	150h

Description of Qualifications

After completing this module successfully, students will have the following professional, methodological and personal competences (social and self-competence):

Participants of the lecture "Integrated Production Systems" get an overview of the tasks of a production manager in an international company. The lecture explains, based on the overall goals of an integrated production system, the basic methods and tools of a lean culture.

Course Content

1. Production Systems in the Course of Time
2. Structure of Integrated Production Systems
3. Continuous Improvement Process
4. Process Orientation in Production Systems
5. Lean Global Production
6. Total Quality Management
7. Low Cost Automation
8. Total Productive Maintenance
9. Material and Energy Efficiency
10. Information Efficiency
11. Lean Development
12. Lean Administration
13. Repetition of Contents and Exam Preparation

Literature

See vhb

Internationality (content related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form *1)	Scope/duration including weighting *2)	Learning objectives/competencies to be assessed
Written examination	Written examination Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Betriebliche Anwendungssysteme	DRAFT VERSION; details to follow

Classification	Module ID	Kind of Module	ECTS
	SEP1	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	German	One Semester	Winter (start in winter 2026/27)	30 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
N.N. (Professor for Digital Processes and Applications)	N.N. (Professor for Digital Processes and Applications)

Prerequisites*

Fundamentals of Business Administration and Business Process Management
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Seminaristic lecture, case-based work, system demonstrations and practical exercises	150h (60h contact time, 90h self-study)

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- Understand ERP systems and the integration of business functions
- Use SAP to map key processes (e.g., procurement, logistics, finance)
- Identify and evaluate value-adding functionalities within ERP
- Perform and document simple configuration tasks
- Reflect on ERP's impact on digital business transformation

Course Content

- SAP ERP architecture and process landscape
- Business scenarios in procure-to-pay, order-to-cash, plan-to-produce
- SAP Fiori interface and navigation
- Basic customizing tasks (SD/MM/FI modules)
- Cross-functional integration and process flows
- ERP as a backbone of digital transformation

Literature

- Tools and Platforms: SAP S/4HANA, Power BI, Tableau, Celonis
- Teaching Material / Reading: Materials will be announced at the beginning of the course. Open educational resources and case studies will be used.

Internationality (content-related)

Global case studies, international platforms, and English-language materials emphasize the international orientation of the module.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1)]	Scope/duration including weighting [*2)]	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Module Work (Portfolio) including: • SAP process walkthroughs • Documentation of process configurations • Reflection report on business value of ERP systems	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

[*1)] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2)] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Enterprise Resource Planning Systems

DRAFT VERSION; details to follow

Classification	Module ID	Kind of Module	ECTS
	SEP2	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	summer (expected start in summer 2026)	30 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
N.N. (Professor for Digital Processes and Applications)	N.N. (Professor for Digital Processes and Applications)

Prerequisites*

Fundamentals of Business Administration and Business Process Management
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Seminaristic lecture, case-based work, system demonstrations and practical exercises	150h (60h contact time, 90h self-study)

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- Understand ERP systems and the integration of business functions
- Use SAP to map key processes (e.g., procurement, logistics, finance)
- Identify and evaluate value-adding functionalities within ERP
- Perform and document simple configuration tasks
- Reflect on ERP's impact on digital business transformation

Course Content

- SAP ERP architecture and process landscape
- Business scenarios in procure-to-pay, order-to-cash, plan-to-produce
- SAP Fiori interface and navigation
- Basic customizing tasks (SD/MM/FI modules)
- Cross-functional integration and process flows
- ERP as a backbone of digital transformation

Literature

- Tools and Platforms: SAP S/4HANA, Power BI, Tableau, Celonis
- Teaching Material / Reading: Materials will be announced at the beginning of the course. Open educational resources and case studies will be used.

Internationality (content-related)

Global case studies, international platforms, and English-language materials emphasize the international orientation of the module.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Module Work (Portfolio) including: • SAP process walkthroughs • Documentation of process configurations • Reflection report on business value of ERP systems	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

AI-driven Business Analytics & Data-Driven Management	DRAFT VERSION; details to follow

Classification	Module ID	Kind of Module	ECTS
	SEP3	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	German	One Semester	Winter (start in winter 2026/27)	30 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
N.N. (Professor for Digital Processes and Applications)	N.N. (Professor for Digital Processes and Applications)

Prerequisites*

Basic Statistics, Excel proficiency
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Seminaristic lecture, case-based work, system demonstrations and practical exercises	150h (60h contact time, 90h self-study)

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- Use data to support management decisions
- Design dashboards with KPIs
- Apply basic data mining and forecasting methods
- Interpret and explain analytical results
- Evaluate ethical implications of data use

Course Content

- Business data types and analytical approaches
- Descriptive and predictive analytics
- Tools: Power BI / Tableau, basic Python or R
- Case-based KPI development
- Forecasting (linear regression, time series)
- Data governance and ethics

Literature

- Tools and Platforms: Power BI, Tableau
- Teaching Material / Reading: Materials will be announced at the beginning of the course. Open educational resources and case studies will be used.

Internationality (content-related)

Global case studies, international platforms, and English-language materials emphasize the international orientation of the module.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1)]	Scope/duration including weighting [*2)]	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Module Work: Seminar Paper (50%): Analysis of a business case with data analytics tools Presentation (50%): Dashboard and findings discussion	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

[*1)] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2)] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

AI-driven Process Analytics & Intelligence	DRAFT VERSION; details to follow

Classification	Module ID	Kind of Module	ECTS
	SEP4	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	German	One Semester	Winter (start in winter 2026/27)	30 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
N.N. (Professor for Digital Processes and Applications)	N.N. (Professor for Digital Processes and Applications)

Prerequisites*

Business Process Management
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Seminaristic lecture, case-based work, system demonstrations and practical exercises	150h (60h contact time, 90h self-study)

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- Conduct process mining using Celonis
- Identify and explain performance gaps in processes
- Develop data-based improvement strategies
- Apply real-time analytics to support decision-making
- Document and communicate process intelligence results effectively

Course Content

- Event log analysis and process visualization
- Process Discovery, Conformance Checking, and Enhancement in Celonis
- KPI definition and monitoring
- Bottleneck and root cause identification
- Simulation of process improvements
- Introduction to automation potentials (RPA)

Literature

- Tools and Platforms: SAP S/4HANA, Celonis
- Teaching Material / Reading: Materials will be announced at the beginning of the course. Open educational resources and case studies will be used.

Internationality (content-related)

Global case studies, international platforms, and English-language materials emphasize the international orientation of the module.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Module Work (Portfolio) including: Case-based process mining tasks using Celonis Analysis report (performance metrics, bottlenecks, root causes) Improvement concept based on simulation and automation	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Business Application Re-Engineering
Legacy Systems Architectures and Modernisation for Digital Transformation

Classification	Module ID	Kind of Module	ECTS
	SEP5	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One semester	Depending on availability	Depending on availability

Module Convenor	Instructor
Prof. Dr. Philipp Brune (vhb, Hochschule für angewandte Wissenschaften Neu-Ulm)	Prof. Dr. Philipp Brune (vhb, Hochschule für angewandte Wissenschaften Neu-Ulm)

Prerequisites*

Basic knowledge of programming, software engineering and computer architecture, as usually taught in relevant undergraduate or graduate courses, is assumed as prior knowledge.
Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration
*Note: please also observe the prerequisites according to examinations regulations law in the current version of the SPO.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Please see detailed vhb course description	150h

Description of Qualifications

After completing this module successfully, students will have the following professional, methodological and personal competences (social and self-competence):

As a course participant, you are able to:
- Deepen your existing expertise in computer science and information technology with regard to the requirements and relevant technologies of enterprise computing and digital transformation.
- Understand, evaluate and be able to apply the problems/challenges as well as the different aspects and approaches of modernizing legacy applications in an enterprise context.
- Understand, evaluate and be able to apply traditional and new approaches (Blockchain, DLT) for online transaction processing (OLTP) as well as the underlying processes and technologies.
- Understand and be able to apply possibilities, concepts and technologies for the implementation and operation of modern mobile or web-based front-ends (systems of engagement) for existing applications.

Course Content

The course is for students interested in computer science and business informatics or information management as well as related courses of study and deals in depth with central topics of enterprise computing. Since the topics of the course are highly relevant for graduates – given the fact of the ubiquitous digital transformation - from a labour market perspective on the one hand, and on the other hand often cannot be dealt with in basic computer science training due to time constraints – this complex of topics lends itself to a cross-university, in-depth course offering.

Literature

See vhb

Internationality (content related)

internationally relevant topics

Examination (If applicable note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form *1)	Scope/duration including weighting *2)	Learning objectives/competencies to be assessed
Oral examination	Oral examination Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Blockchain Applications for Business

Classification	Module ID	Kind of Module	ECTS
	SEM1	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One Semester	Depending on availability	Depending on availability

Module Convenor	Instructor
Prof. Dr. Björn Ivens (vhb, Otto-Friedrich-Universität Bamberg)	Prof. Dr. Björn Ivens (vhb, Otto-Friedrich-Universität Bamberg)

Prerequisites*

Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration.
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Please see detailed vhb course description	150h

Description of Qualifications
Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

In order to account for the increasing importance of blockchain technology in business practice and in order to get students ready for this new wave of innovation, we created this course, entitled "Blockchain Applications for Business".
In a nutshell, by taking this course, students can acquire a holistic understanding of basic blockchain fundamentals and gain comprehensive insights into the potential of blockchain technology in a multitude of business use cases. That said, this course will help students understand current developments in blockchain from many diverse perspectives and lay a solid foundation to further explore the blockchain topic.

Course Content

1. Foundations of Blockchain Technology and Applications
1.1 Introduction to Blockchain Technology
1.2 Tech Basics of Blockchain Technology
1.3 Exploring the Bitcoin Whitepaper
1.4 Hands-on Tutorial: Smart Contracts on Ethereum
2. The Value Proposition of Blockchain Technology
2.1 Strengths and Weaknesses of Blockchain Technology
2.2 Identifying Business Opportunities in the Blockchain Space
3. Blockchain Use Cases in Different Business Areas
3.1 Use Cases of Blockchain: Introduction & Marketing
3.2 Use Cases of Blockchain: Finance Industry
3.3 Use Cases of Blockchain: Automotive Industry
3.4 Use Cases of Blockchain: Supply Chains & IoT
3.5 Use Cases of Blockchain: Vocational Education Training
4. A Differentiated Perspective on Blockchain: Legal, Societal, and Ecological Aspects of Blockchain

Literature

https://kurse.vhb.org/VHBPORTAL/kursprogramm/kursprogramm.jsp?kDetail=true&COURSEID=14042,74,1403,1

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Written exam	Details will be provided by the respective lecturer Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Business Model Innovation

Classification	Module ID	Kind of Module	ECTS
	SEM2	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Each winter semester	Depending on availability

Module Convenor	Instructor
Prof. Dr. Julia Heigl	Prof. Dr. Julia Heigl

Prerequisites*

None
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
The module is part of the module group *Specialization Electives* of the Digital Technology and Management Bachelor's degree program. It is also used as Elective in the DHM, TM and WI programs.	Guided project work	Contact time/coaching: 60 h Self-study and project work: 90 h Total workload: 150 h

Description of Qualifications
Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Professional Skills:
- Students analyze current and expected environment, industry, and company specifics, particularly with regard to the effects of digitization (and other megatrends).
- Students will analyze customer needs and develop new value propositions.
- Students will analyze, develop and evaluate business models, including revenue model and necessary architecture (resources, activities, partnerships).

Methodological Skills:
- The students apply common methods of business model development, requirements and needs analysis as well as innovation approaches for the further development of the business model in a concrete (practical) project. They use personas, business model canvas and other templates.
- Students recognize intercultural and interdisciplinary challenges in teamwork and adapt their working methods accordingly.
- The students use digital cooperation and communication tools.

Personal Skills (Social Competence and Self-competence):
- Students will be able to cooperatively plan and execute a team project on time, working effectively and thoughtfully, especially in a heterogeneous, interdisciplinary, and international team, and if necessary, leading the team.
- Students will be able to communicate results effectively and express complex information concisely and comprehensively, both orally and in writing.

Course Content

Global megatrends such as digitization have a radical impact on what and how companies create benefits for customers (value proposition innovation), how these benefits are delivered (architectural innovations) and how companies earn money (revenue model innovations). Therefore, existing business models must be deliberately changed in the sense of a business model innovation or others must be created from scratch. In contrast to product or process innovations, business model innovations thus directly address a company's business model. Not only are customer needs better satisfied, but the basic structures and competitive rules of the industry are also called into question.

As part of the module, students work on an international project in teams with students from other universities on a current, real-life practical issue in which a new platform business model (virtualtraveller.com) is to be scrutinized and made more attractive for both end users (young travelers) and advertisers (including FinnAir, Samsung, but also small local providers).

The task will be worked on in defined sub-steps, supported by teaching units on the following topics:
- Working with the Business Model Canvas: analysis, development and evaluation of an own business model.
- Impact of digitalization and other megatrends on business models and organizations
- Platform business
- Basics of the design thinking process
- Understanding user groups and their needs, requirements and problems (developing persona)
- Working with a 360° camera, shooting your own filem
- Brainstorming and creativity techniques
- Evaluating market potential and revenue model
- Business models in practice

Literature

Kim, W. C./Mauborgne, R.: How to create uncontested market space and make the competition irrelevant. Harvard Business Review, 4. Jahrgang (2005), Nr. 13, 1-2.
Osterwalder, A./Pigneur, Y.: Business model generation: a handbook for visionaries, game changers, and challengers. John Wiley & Sons, 2010.
Robier, J.: UX Redefined. Winning and Keeping Customers with Enhanced Usability and User Experience, Springer 2016.

Internationality (content-related)
The project takes place in cooperation with the universities Haaga-Helia University of Applied Sciences, Helsinki/Finland and Thomas More Hoge-school, Geel/Belgium. Teams are international and must communicate in English. The accompanying lectures will also be held in English. The practical question dealt with is of international relevance.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)		
Form [*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Module work (ModA)	Project work (written + oral) in groups of approx. 6 students each (2 from Weiden, 4 from Finland and/or Belgium) on a business question presented at the beginning of the semester in several phases, which are presented at the project kickoff and are to be worked on successively. Each student has to contribute individually to the common task. The overall results are to be submitted in the form of a pitch video (English) as well as a written summary (approx. 15 pages per German group of 2, language English or German), weighting 50/50.	The group project is used to test the practical learning content and competence profiles, including teamwork and presentation skills.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Digital Marketing and eCommerce

Classification	Module ID	Kind of Module	ECTS
	SEM6	Mandatory	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Weiden	English	One Semester	Winter Semester	60

Module Convenor	Instructor
Prof. Dr. Julia Heigl	Prof. Dr. Hannes Huttelmaier

Prerequisites*

Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload	
This module is part of the module group *Specialization Electives* in the Digital Technology and Management bachelor program. Compatibility with other programs of the university is to be examined individually.	Lecture, seminar with exercises, guest lecture, project work, practical applications using software	Contact time: Self-study: Total workload:	60 h 90 h 150 h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- Describe and critically discuss the impact of digitalization on marketing and sales.
- Explain the theoretical foundations, essential terms, concepts and tools of digital marketing.
- Analyze the changing information and purchasing behaviour of B2B decision-makers.
- Plan and implement digital marketing campaigns and measure their performance.
- Describe the digital marketing channels which are relevant for B2B companies, to discuss them critically and to apply them to real-world cases.
- Identify, describe and apply use cases for artificial intelligence in marketing automation.
- Apply content of this module in state-of-the-art software tools to practical problems.

Course Content

- The impact of digitalization on marketing and sales - strategy, marketing mix, operations.
- Foundations of digital marketing.
- Planning digital marketing campaigns.
- Customer Journey Mapping.
- Digital marketing channels and instruments - fundamentals, applications, tools and performance measurement: e.g. corporate website design; search engine marketing (SEO / SEA); influencer marketing; social media marketing; B2B e-commerce; affiliate marketing; programmatic advertising; marketing automation and email marketing.
- Application of artificial intelligence in marketing

Literature

- Chaffey, D./Ellis-Chadwick, F. (2019): Digital marketing, 7th ed., Pearson, Harlow, England ; New York.
- Artun, Ö./Levin, D. (2015): Predictive Marketing: Easy Ways Every Marketer Can Use Customer Analytics and Big Data. John Wiley & Sons, Inc, Hoboken, NJ, USA.
- Kingsnorth, S. (2019): Digital Marketing Strategy: An Integrated Approach to Online Marketing, 2nd ed., Kogan Page.
- Waite, K./Vega, R.P. (2018): The Essentials of Digital Marketing, Global Management Series. Goodfellow Publishers, Limited.
- Miller, M. (2012): B2B Digital Marketing: Using the Web to Market Directly to Businesses, Que Biz-Tech. Pearson Education.
- Chaffey, D./Smith, P. (2017): Digital Marketing Excellence: Planning, Optimizing and Integrating Online Marketing. Taylor&Francis.

Internationality (content-related)

The course content is internationally and universally relevant and applicable. Companies from around the world will serve as example for case studies and practical examples.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form *1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Module work (ModA)	Portfolio Details will be announced in the first class and via Moodle	The portfolio is used to test the practical learning content and competences.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

International Marketing

Classification	Module ID	Kind of Module	ECTS
	SEM3	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One Semester	Depending on availablility	Depending on availability

Module Convenor	Instructor
Prof. Dr. Dirk Holtbrügge (vhb, Friedrich-Alexander-Universität Erlangen-Nürnberg)	Prof. Dr. Dirk Holtbrügge (vhb, Friedrich-Alexander-Universität Erlangen-Nürnberg)

Prerequisites*

Successful completion of Marketing and Sales.
Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration.
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Please see detailed vhb course description	150h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

The participants acquire detailed expertise in the field of international marketing. Effective international marketing is increasingly important for companies due to rising international connectivity between countries and companies, and companies' need to grow by selling their products and services globally. They can understand, explain, reflect, and apply the theories, concepts, and terminology of the field and are familiar with empirical studies in the field of international marketing. The participants understand the challenges of international marketing and can independently develop solutions for problems to questions of standardization and differentiation in an international context, of international market entry, and of the design of the marketing mix in an international context. They also understand these aspects with regard to different industries (B2B, B2C) and different countries Special attention is paid to the transfer of theoretical contents to practical examples. Therefore, different country and company case studies are included in the form of video interviews. The participants are provided with interesting insights into the international marketing activities of several international companies headquartered in the Nürnberg Metropolitan Area.

Course Content

Foundations
Challenges and Opportunities of International Marketing Methods
International Market Research
Strategies
International Market Entry Strategies
Standardization vs. Differentiation of International Marketing Policies: International Marketing Mix
International Product Policy
International Price Policy
International Placement Policy
International Promotion Policy

Literature

https://kurse.vhb.org/VHBPORTAL/kursprogramm/kursprogramm.jsp?kDetail=true&COURSEID=14039,74,1407,1

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Details will be provided by the respective lecturer Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

People Analytics: Data Science for Human Resources Management

Classification	Module ID	Kind of Module	ECTS
	SEM4	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One Semester	Winter and Summer	Depending on availability

Module Convenor	Instructor
Prof. Dr. Sven Laumer (vhb, Uni Erlangen-Nürnberg - FAU)	Prof. Dr. Sven Laumer (vhb, Uni Erlangen-Nürnberg - FAU)

Prerequisites*

Successful completion of Modules:
- Mathematics
- Algorithms and Data Structures
- Object-oriented Coding
- Statistics and Quantitative Methods
- Information Systems and Databases

Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration.
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Depending on the respective program	150h

Description of Qualifications

The course provides a detailed overview of essential concepts, processes and technologies of data-driven control of human resources management (HRM). In addition to directly employee-related topics, it also deals with the support of the overall corporate strategy in terms of human resources. In addition to the basics of HRM, the lecture will primarily deal with the contents of statistical data analysis using a continuous case study in the areas of sourcing, acquisition, onboarding, performance, fluctuation and well-being analysis. In this context, the observance of legal and ethical framework conditions plays an overriding role in the application of algorithms and technologies with personal data. The aim of these applications is to work out interrelationships, to identify and evaluate patterns and complex interrelationships of effects, and to predict developments.
In a final project work, various questions from the application areas of people analytics are examined and practically processed. The focus is on independently conducting analyses, interpreting results and deriving recommendations for action.

Course Content

Part A:
1. Data-driven HRM
2. Fundamentals of Data Science
3. Ethical Consideration of People Analytics
Part B:
4. Personnel Planning Analytics
5. Sourcing and Acquisition Analytics
6. Onboarding and Performance Analytics
7. Well-Being Analytics
8. Turnover Analytics

Literature

See vhb

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Module Work (ModA)	Project work / Seminar paper Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Electronic Human Resources Management

Classification	Module ID	Kind of Module	ECTS
	SEM5	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One semester	Depending on availability	Depending on availability

Module Convenor	Instructor
Prof. Dr. Sven Laumer (vhb, Friedrich-Alexander-Universität Erlangen-Nürnberg)	Prof. Dr. Sven Laumer (vhb, Friedrich-Alexander-Universität Erlangen-Nürnberg)

Prerequisites*

None

Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration
*Note: please also observe the prerequisites according to examinations regulations law in the current version of the SPO

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	The contents are presented in learning videos and slides.	150h

Description of Qualifications

After completing this module successfully, students will have the following professional, methodological and personal competences (social and self-competence):

The course deals with the management of one of the most important resources in a company: its employees. In addition to teaching the basics of Human Resources Management (HRM), the course focuses on the use and development of digital technologies and considers how digital work systems are changing HRM. The fundamentals of strategic and electronic human resources are discussed, the use of social media in HR is considered, data-driven approaches and their use in HR are addressed, and the challenges and opportunities of electronic human resources management (E-HRM) are discussed.

Course Content

1. Fundamentals of strategic and electronic HRM
   - The Digital HR Organization
   - Human Resources Information Systems
   - Workflow Management and HRM
2. Social Media
   - Enterprise Social Media and Network Analysis for HRM
   - Social Media, Employer Branding, and Gamification
3. Data-driven approaches and their use in HRM
   - People Analytics – Big Data, AI, and HRM
   - Recommender Systems
   - Chatbots in HRM
4. Challenges and opportunities of E-HRM
   - E-Performance, E-Learning, and employer development
   - Technology Acceptance

Literature

See vhb

Internationality (content related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form *1)	Scope/duration including weighting *2)	Learning objectives/competencies to be assessed
written examination	written examination Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Digital Markets and Platforms

Classification	Module ID	Kind of Module		ECTS
	SEM7	Elective		5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One semester	Depending on availability	Depending on availability

Module Convenor	Instructor
Prof. Dr. Tobias Kretschmer (vhb, Ludwig-Maximilians-Universität München)	Prof. Dr. Tobias Kretschmer (vhb, Ludwig-Maximilians-Universität München)

Prerequisites*

None
Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration
***Note: please also observe the prerequisites according to examinations regulations law in the current version of the SPO.**

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Please see detailed vhb course description	150h

Description of Qualifications

See vhb

Course Content

In today's digital economy, platforms have become pervasive, profoundly transforming the landscape of industries ranging from social media to e-commerce, payment systems, and operating systems. These platforms, acting as intermediaries in varied settings, facilitate complex interactions across B2B, B2C, and peer-to-peer environments. The success of platform markets is driven by multifaceted factors, including network effects, rapid technology diffusion, and significant user switching costs. Moreover, the emergence of platform markets has catalysed the emergence of innovative business models and novel pricing strategies that have fundamentally altered competitive dynamics and reshaped relationships between firms and consumers.
This course delves into these pivotal and contemporary issues, offering a rigorous analysis of the underlying principles that drive platform success and the strategic considerations essential for navigating this evolving digital landscape. Through a blend of theoretical foundations derived from seminal academic papers and cutting-edge empirical studies, combined with practical insights, the course equips students to critically assess and influence the trajectory of digital markets.
Course structure
1. Foundational
A: Network goods and network effects; B: Characteristics of two-sided markets; C: Pricing strategies in two sided markets; D: From a world of scarcity to a world of abundance; E: Non-pricing strategies in two sided markets; F: Experience goods: reputation and feedback systems
2. Platform and Ecosystems Dynamics
A: Complementors: Heterogeneity and Strategies; B: Adoption and diffusion of network goods;
C: Platform governance and compatibility; D: Platform orchestration activities; E: Competitive environment in platform ecosystems; F: When users avoid using the platform
3. Digital Markets
A: How (big) data affect firms and consumers; B: Pricing in the digital world; C: Competition policy in a digital world; D: AI and the Economy; E: Digital consumers; F: Digital rights

Literature

See vhb

Internationality (content related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form *1)	Scope/duration including weighting *2)	Learning objectives/competencies to be assessed
written examination	written examination Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Introduction to Corporate Foresight

Classification	Module ID	Kind of Module	ECTS
	SEM8	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One semester	Depending on availability	Depending on availability

Module Convenor	Instructor
Prof. Dr.-Ing. Evi Hartmann (vhb, Friedrich-Alexander-Universität Erlangen-Nürnberg)	Prof. Dr.-Ing. Evi Hartmann (vhb, Friedrich-Alexander-Universität Erlangen-Nürnberg)

Prerequisites*

None
Application, organization and participation is entirely up to the participant.
Students are recommended to consult with the Head of the study programme prior to registration
*Note: please also observe the prerequisites according to examinations regulations law in the current version of the SPO.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	The contents are presented in learning videos and slides.	150h

Description of Qualifications

After completing this module successfully, students will have the following professional, methodological and personal competences (social and self-competence):

This course teaches the basics of strategic foresight. Each of the three phases of the foresight process (scanning, foresight, transfer) is covered in detail. Participants are given an overview of the more than 40 methods of foresight. A special focus is placed on the scenario technique. Many practical examples will also be used to show how today's decision-makers in all organizations can systematically develop future scenarios and transfer them to their own organizational context. In this course, participants learn skills that can make a contribution at many interfaces in and to organizations: Strategy & Consulting, Transformation, Innovation and Risk Management, Marketing & Communication

Course Content

Trend and future research is increasingly establishing itself as a separate specialist/functional area in organizations. In industry and associations, for example, corporate foresight experts examine the future of industries, markets, new business models or the competitive landscape. In the public sector, urban and spatial development as well as social and technological issues are primarily addressed in terms of regional foresight. Strategic foresight now also plays a prominent role at federal level and in the EU's framework research programs.
Course structure
Session 1: The basics of futurology: fundamentals and overview
Session 2: Organization is half the future: the foresight process
Session 3: The future can be trained: foresight methods in detail
Session 4: Scenarios = art and science: scenario writing & storytelling, marketing & PR
Session 5: Thinking outside the box: scanning, trends & wildcards
Session 6: A different look at trends, trend management and business wargaming
Session 7: The future from the computer: foresight support systems, trend databases & co.
Session 8: Foresight support systems and innovation
Session 9: Looking into the future: selected trends, technologies, scenarios and curiosities
Session 10: Shaping the future: scenario transfer in strategy, innovation & co.

Literature

See vhb

Internationality (content related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form *1)	Scope/duration including weighting *2)	Learning objectives/competencies to be assessed
written examination	written examination Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Practical Project

Classification	Module ID	Kind of Module	ECTS
	SEPP	Elective	5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
tbd	English / German	One Semester	Depending on availability	30 *There is neither a claim to actual realization of the module nor to participation*

Module Convenor	Instructor
Prof. Dr. Julia Heigl	respective professor overseeing the project

Prerequisites*

Participation **must be coordinated in advance with the person responsible for the module**.
Please check AVIS-Module https://www.oth-aw.de/studium/campus-und-leben/marktplatz/avis/ for available projects.
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
This module is part of the module group *Basic Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Depending on the respective program	150h

Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

Acquisition and application of specific knowledge to a practical problem the fields of digital technology and/or management

For dual students:
· Projects from dual partner companies are handled by their dual students. Non-dual students may participate in these projects if the number of participants allows.
· If they have the appropriate professional qualifications, projects can also be carried out as part of a dual practical phase. A corresponding project report must be submitted for recognition and grading. The possibility of credit transfer must be clarified in advance with the programme director.

Course Content

Depending on the type of project

Literature

Will be provided

Internationality (content-related)

internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Module work (ModA)	Details will be provided by the lecturer	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Programming in C++

Classification	Module ID	Kind of Module			ECTS
	SEPC	Elective			5

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
vhb	English	One semester	Depending on availability	Depending on availability

Module Convenor	Instructor
Prof. Dr. Peter Faber (vhb, Technische Hochschule Deggendorf)	Prof. Dr. Peter Faber (vhb, Technische Hochschule Deggendorf)

Prerequisites*

Basic knowledge of programming helpful, but not essential.
This course may be taken as specialisation elective ONLY if not taken as Basic Elective (MINT Skill)
*Note: please also observe the prerequisites according to examinations regulations law in the current version of the SPO.

Usability	Forms of Instruction	Workload
This module is part of the module group *Specialization Electives* in the Digital Technology and Management Bachelor's program. Compatibility with other programs of the university has to checked individually.	Please see detailed vhb course description	150h

Description of Qualifications

After completing this module successfully, students will have the following professional, methodological and personal competences (social and self-competence):

This course teaches the fundamentals of the programming language C/C ++ in 2 parts of the course. Part 1 is suitable for beginners and participants with basic C / C ++ knowledge. Part 2 deals above all with dynamic objects and C ++ special concepts and turns to advanced users. The two parts of the course can be worked on independently of each other, or even in one semester.

Course Content

This course teaches the fundamentals of the programming language C/C ++ in 2 parts of the course. Part 1 is suitable for beginners and participants with basic C / C ++ knowledge. Part 2 deals above all with dynamic objects and C ++ special concepts and turns to advanced users. The two parts of the course can be worked on independently of each other, or even in one semester.

The focus of the course is on the practical application of the programming concepts and syntax elements for solving problems in business informatics.

Students are offered intensive support from e-tutors.

Each part of the course includes a script with many practical examples. Each chapter also includes video tutorials, self-test tutorials and programming tutorials.

In each part of the course, two programming exercises must be prepared and delivered by the students by individual work. The timely delivered programming solutions are evaluated by e-tutors. A successful result is the precondition for attending the exam.

Qualification Goals:
In Part 1 (Fundamentals) the participants are enabled to learn the basics of a procedural programming language (C) and an object-oriented programming language (C++) in theory and practice to solve simple application problems of business informatics.
1.1 Introduction to Programming
1.2 Variables, data types, operators, in-/output
1.3 Functions
1.4 Control Structures
1.5 Arrays / Sample application procedural programming
1.6 Paradigms of object orientation (OO)
1.7 Classes and objects
1.8 Constructor, member initialization list, overloading, destructor, static member variables
1.9 Inheritance / Sample application object-oriented programming

Part 2 introduces advanced programming concepts of an object-oriented programming language. The students acquire the skills and experience needed to solve complex application problems.
2.1 File Processing & Exception Handling
2.2 Pointers
2.3 Dynamic objects
2.4 Linked lists / Sample application file processing & error handling with linked lists

2.5 Polymorphism, virtual functions, abstract classes
2.6 Operator overloading
2.7 Templates

Literature
See vhb

Internationality (content related)
internationally relevant topics

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form [*1]	Scope/duration including weighting [*2]	Learning objectives/competencies to be assessed
Written examination (take-home study-work), 90 min.	Written examination (take-home study-work), 90 min. Precondition for participation in the "Take-Home-Exam" (study-work) for C ++ Teil1 + 2: Successful participation in the submission tasks (ESA) for C ++ / Teil1 and C ++ / Teil2. Registration for the exam both as communicated in the vhb course **AND** via OTH AW PRIMUSS is necessary	The entire learning contents and competence profiles are assessed by way of the aforementioned examination form.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.

[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Practical Phase

Internship

Classification	Module ID	Kind of Module	ECTS
	7.1	Mandatory	25

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Location of the company / organization	Determined by place and company of the practical phase	One Semester	Offered each semester	

Module Convenor	Instructor
Prof. Dr. Julia Heigl	

Prerequisites*

Successful completion of all modules of study section 1 and German level B2.2
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
Applicability in the further course of studies: Successful completion of the internship semester is a prerequisite for registration for the bachelor's thesis. University-wide applicability: The usability in other study programs must be checked in each individual case.	Practical phase	Effort for internship: Duration 20 weeks in the company with a working time usual in the company for full-time work.

Description of Qualifications
Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:
- Students have gained insight into a company's value creation processes through independent work in planning, organisation or control tasks or participation in projects.
- Students have applied and reflected on knowledge, methods and procedures which have been taught in the theoretic studies.

Course Content

- Independent work on projects and problems, the topics of which are closely related to the completed studies or represent a valuable addition.
- Application and deepening of knowledge, methods and procedures already gained, which are taught and conveyed in the theoretic studies.

Dual students complete the practical phase at the dual partner company

Literature
- Guideline for the practical study semester for the Bachelor's degree programmes of the Faculty of Industrial Engineering and Health
- Training plan for the practical semester in the Bachelor's degree programmes of the Faculty of Industrial Engineering and Health
Documents available at: https://www.oth-aw.de/myoth/studiengangsdokumente
Please also see Moodle course "DTM study program" for additional info.

Internationality (content-related)

Students who have acquired their university entrance qualification outside Germany are recommended to complete the internship in Germany, ideally in a company with an international orientation.
German students are recommended to complete the internship in a non-German speaking country.

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form[*1]	Scope/duration including weighting [*2]	Learning Objectives/Competencies to be Assessed
Internship report	Internship report with a grade of 'pass' (the report is assessed by the internship supervisors). Students are strongly advised to adhere to the registration deadline for the internship. In addition, the internship report must be submitted for all students either on the last Friday in January for the winter semester or on the last Friday in July for the summer semester. Failure to meet the deadline may jeopardise the recognition of the internship. The guidelines for the internship phase can be found at MyOth and on moodle (DTM study program)	The internship report is used to assess the overall learning content and competency profiles.

[*1] Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
[*2] Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).

Bachelor Thesis

Bachelor Thesis			

Classification	Module ID	Kind of Module	ECTS
	8.1	Mandatory	10

Location	Language	Duration of Module	Term/frequency	Max. Number of Participants
Not location-bound	English or German	Refer to SER	According to study progress	1

Module Convenor	Instructor
Exam committee chair	First and second supervisor or first reviewer

Prerequisites*

Cf. Programme and Examination Regulations, General Examination Regulations.
Furthermore, the guidelines of the Faculty of Industrial Engineering and Healthcare "Wissenschaftliches Arbeiten: Preparation of a Thesis" must be observed. The current version is available on the OTH_Homepage under myOTH.
* Note: Please also note the prerequisites according to the examination regulations in the respective valid SPO version.

Usability	Forms of Instruction	Workload
Bachelor Thesis in the study programme Diogital Technology and Management. The usability in other study programs must be checked in each individual case.	Bachelor Thesis	300 h

Description of Qualifications
Description of Qualifications

After successful completion of the module, students will have acquired the following professional, methodological and personal skills and competencies:

- Independent methodical elaboration of a complex, practice-relevant, definable (sub-)project in a study programme-related environment and written documentation in the form of a scientific paper within a specified time frame, using scientific methods.

Depending on the task, this leads to the following skills in detail:
- students plan, organise and design the project process independently and can select and apply suitable methods for processing.
- Students identify and analyse specific problems.
- students are able to independently expand your knowledge through your own targeted research.
- students can systematically develop solutions and evaluate them critically.
- students document the results you have achieved in a professional and comprehensible manner in written form in accordance with the faculty-specific requirements for academic work.

Course Content

Depending on the task

For dual students: The bachelor's thesis must be completed in collaboration with the respective dual partner company. The content details and academic standards are ensured through collaboration between the company supervisor and the initial examiner at OTH Amberg-Weiden.

Literature

Own research

Internationality (content-related)

choice of an internationally relevant topic and/or company

Examination (If applicable, note on multiple choice - § 22 para. 1 sentence 2 ASPO)

Form*1)	Scope/duration including weighting *2)	Learning Objectives/Competencies to be Assessed
Bachelor Thesis	The final thesis is to be written after individual consultation with the first examiner. Regulations for processing are contained in the study programme and examination regulations as well as in the general examination regulations. The guidelines of the Faculty of Industrial Engineering and Healthcare "Scientific work: Preparation of a Thesis" must be observed. The current version is provided on the OTH homepage under myOTH.	Depending on the specific task, the above-mentioned competencies are tested via the bachelor thesis.

*1) Please note the applicable overview of examination forms in §§ 20 to 29 ASPO.
*2) Please also provide information on the weighting (in %). If applicable, also provide a reference to a bonus system (cf. § 33 sentence 10 ASPO) and to the attendance requirement (§ 9 para. 5 sentence 2 and § 11 para. 2 no. 4 ASPO).