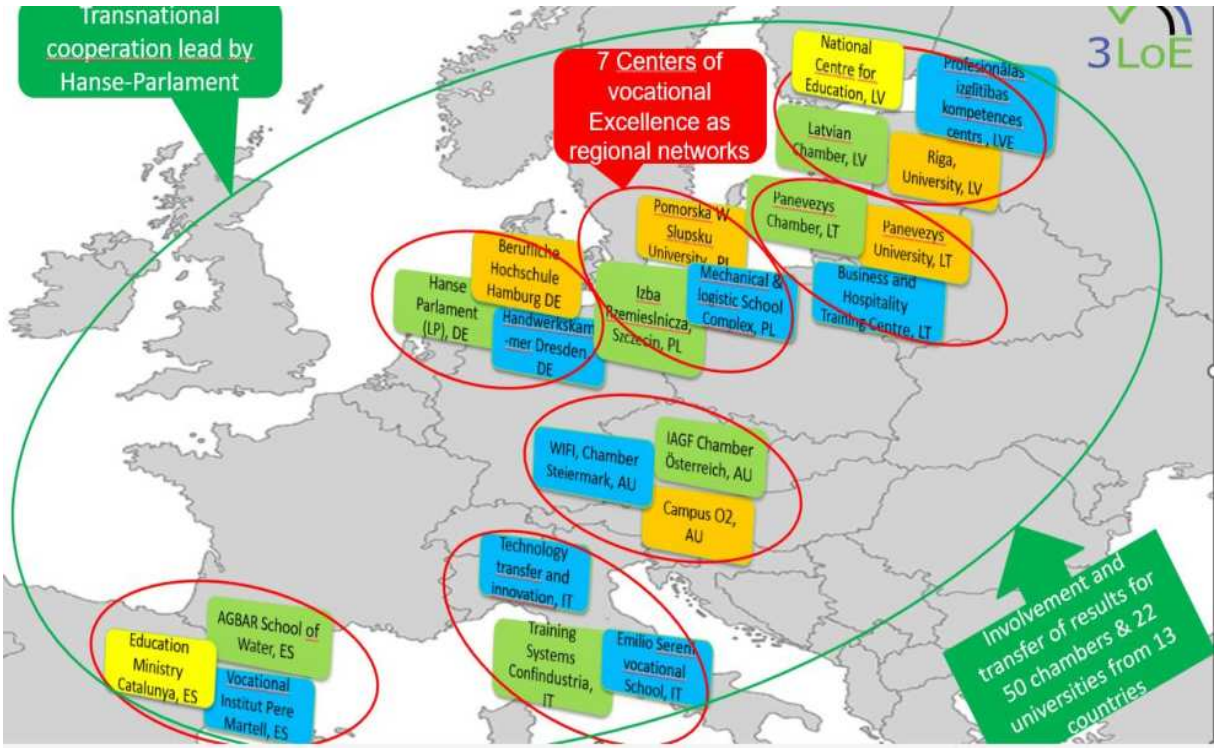
Result 5.1
Dual Bachelor's Degree Programs

Partner



Language

English

Table of Content

Summary of the Project and Introduction

1. About the 3LOE project

Around 99% of all EU businesses are SMEs, creating up to 70% of all jobs. In general, SMEs have good growth prospects for the future and are particularly well equipped to solve environmental problems and to enhance the green economy. However, in most of the project countries, SMEs are confronted with a shortage of skilled workers and young entrepreneurs. This shortage of skilled workers is even more alarming taking into account that due to aging of current entrepreneurs, a large and growing number of companies will have to be handed over to the next generation. Furthermore, young specialists and entrepreneurs often lack the qualifications and skills needed in order to respond to contemporary developments in the fields of energy, climate and environmental protection. The following problems have been identified in SMEs working in the fields of green economy, energy and environmental protection:

- Blatant and growing shortage of skilled workers.
- Large qualification deficits, especially in the Green Economy.
- Loss of attractiveness and low qualification of school-based VET.
- Low rates of further training and insufficient orientation of offers to SME needs.
- Ageing of entrepreneurs and increasing shortage of young people (demographic change).
- Failure of business transfers and low rates of business start-ups.
- Low innovation rates and insufficient productivity.
- Not enough cooperation between universities and SMEs and a lack of teaching geared to SME needs.
- Comparably low internationalization of SMEs and vocational training providers.
- Lack of national level support for SMEs".

To meet these challenges, work-based learning and new paths in vocational training must be provided through cooperation between educational institutions, economic chambers and SMEs. University graduates are often well-qualified in theory, but lack practical knowledge, skills and abilities that are crucial for SMEs. For this reason, VET reforms must also involve higher education, and should implement dual bachelor's degree programs that combine a bachelor's degree with vocational training and on-sight work in companies.

In the 3LOE project, an innovative and complex project structure with 22 project partners from 7 countries as well as 60 associated partners from 13 countries was designed. In each country, centers of vocational excellence (COVEs) in Green Economy will be established, managed and their permanent continuation ensured. A transnational cooperation of the centers will be developed, extended to 60 education stakeholders from 13 countries and operated permanently in an institutionalized form. The centers will offer a wide range of dual education measures in vocational training, further education and higher education, that are being developed, tested and evaluated in the project. These educational measures on EQF levels 3-7 focus on Green Economy, Digitalization and Entrepreneurship. Furthermore, vocational and educational consulting and innovation support for SMEs will be developed and implemented. In total, seven Train-the-Trainer programs will be developed and implemented permanently by

the project partners. All results will be transferred to the 60 associated partners together with implementation advice.

The objectives and aimed outcomes of the 3LOE project can be summarized as following:

1. Foundation of a three-level Center in each project country

1.1 Building the "Green Economy" skills alliance for qualifications in SMEs with educational and economic actors from the 7 project countries; development of information and cooperation tools.

1.2 Expansion of the skills alliance to the 60 associated partners from 13 countries, comprising chambers of commerce, SME associations, as well as universities of applied sciences/colleges.

1.3 Development, testing and evaluation of a curriculum and teaching materials for Train the Trainer courses for personnel and center management (vocational schoolteachers, trainers in SMEs and lecturers in further and higher education institutions).

1.4 Evaluation of the construction and operation of the seven centers of Excellence and of the transnational cooperation.

1.5 Development of business and financing plans and ensuring the long-term continuation of the seven centres and transnational cooperation.

1.6 Development, consulting and introduction of political strategy program.

2. Implementation and realization vocational training

2.1 Development and implementation of a tool for vocational and qualification counselling as well as a training for consultants and teachers to use the tool.

2.2 Implementation of the dual system, so that work-based learning is put into practice in the project countries.

Preparation and transfer of curricula and examination regulations for dual vocational training for different professions and implementations in Poland, Lithuania, Latvia and Spain.

Development, test and implementation Trainings for teachers to conduct dual vocational training as well as Training of trainers in SMEs.

2.3 Development political concept for the training and integration of young people with learning difficulties for young people with learning difficulties (EQF level 3).

Development, test and implementation of a dual vocational training "Specialist for Building Insulation”.

2.4 Development, testing and evaluation of education programme, teaching materials and examination regulations for the provision of sector-specific qualifications already during the initial vocational training for stronger learners. Implementation in the dual system, so that work-based learning is put into practice in the project countries.

2.5 Development and implementation five-year technician training „Ecologic Solutions in Logistics”.

3. Implementation and realization of further vocational training

3.1 Development and implementation of concepts and instruments for the management of continuing vocational training.

3.2 Development, test and implementation of a Train-the-Trainer program for teachers to conduct further training.

3.3 Development and implementation of a concept "SME-fair digitalization" as well as development, test and implementation of two train the trainer programs "Basic and advanced digital skills".

3.4 Transfer and implementation of four further trainings Energy Saving and Renewable Energies.

3.5 Preparation, transfer and implementation of six further trainings in the Green Economy.

3.6 Development, testing and evaluation of different training programs and teaching material for owners, managers and qualified workers of SMEs (EQF level 5 and 6). The trainings are specifically tailored to SME needs and different qualification levels and combine the transfer of technical, professional and management know-how.

- Training Enterprise and Entrepreneurship in Green Economy
- Training Energy Service Manager
- Trainings vocational Master Carpenter and Electric
- Training Construction Technician
- Training Service Technician
- Training Sustainability in foodservice industry

3.7 Development of regulations for new continuing education occupational profiles with a focus on the green economy.

3.8 Development of an integration programme for the unemployed (EQF level 4) in order to be able to place the unemployed in permanent jobs through further training seminars and a further training qualification.

4. Implementation and realization of higher education

4.1 Preparation and transfer of curricula, evaluation and examination regulations for two existing dual Bachelor degree programmes "Management of Renewable Building Energy Technology" and "Business Administration for SMEs".

4.2 Development and beginning of implementation of new dual Bachelor degree programs

- Business Administration & Sustainable Management of SMEs
- Entrepreneurship and Innovation in Green Economy
- Logistics - Green Supply Chains
- Service technician

- Tutorial “Sustainable management Climate neutrality for companies”

4.3 Development, test and implementation of four study modules (EQF level 6) on SME management in the Green Economy sector, which will be carried out in the dual study system and integrated into existing Bachelor degree programmes.

4.4 Development and implementation of concept for innovation promotion Solutions for manageable R&D tasks of SMEs and conducting manageable R&D projects for SMEs-

4.5 Development, testing and implementation of Training program for university lecturers and SME advisors.

5. Dissemination, transfer and use of the project results

5.1 Development of a concept and summary evaluation of the dissemination results of all partners

5.2Transfer of all educational measures to 60 educational institutions in 13 countries and needs-oriented implementation consultations as well as realization of a bundle of measures for further dissemination of the project results.

5.3 Further dissemination activities such as presentations online, at third-party events, press releases and conferences.

5.4 Book with all results of the project and distribution via book trade.

For each of the three levels of educational measures there will be:

- Target-group-specific educational programs.
- Curricula, teaching materials, etc. developed in a leading role by the educational institutions of the respective level, whereby the educational institutions of the other levels (in particular universities) participate in an advisory and supportive manner.
- Representatives of the participant target groups involved in the development work.

All educational measures will be tested with the respective target groups under different national conditions in the countries, evaluated and completed on the basis of the evaluation results with application notes.

2. About Dual Bachelor’s Degree Programs

Small and medium-sized enterprises need highly qualified entrepreneurs, managers and specialists who have comprehensive theoretical knowledge and equally practical skills and experience. Graduates of colleges and universities have good theoretical knowledge but lack practical experience and can therefore only be used by SMEs to a very limited extent. For this reason, dual Bachelor's degree programs are to be implemented in all seven Centers of vocational Excellence as part of the project, combining vocational training and several years of work with a recognized Bachelor's degree. To this end, a dual Bachelor's degree program in "Business Administration and Sustainable Management for SMEs" was developed in the 3 LOE project, transferred to all seven COVEs and implementation advice was provided here.

Compared to the six other partner countries, dual Bachelor's degree programs are widespread in Germany and are carried out here with great success. The 3LOE

project can build on the extensive experience and very successful dual study programs for SMEs in Germany. For this reason, two successful German dual study programs were transferred to all COVE.

- Modul Manual “Management of Renewable Building Energy”
- Modul Manual "Business Administration for SMEs”

The transfer was accompanied by intensive implementation counselling. The first implementations of COVE Lithuania began while the project was still running.

A particularly strong interest in dual study programs developed during the project implementation in Austria. For this reason, comprehensive piloting was carried out in Austria with all regional chambers of commerce for the introduction and implementation of dual study programs.

Accordingly, the following Result 5.1 Dual Bachelor’s Degree Programs comprises the following parts:

- Dual Bachelor's Study Program Business Administration and Sustainable Management for SMEs
- Dual Bachelor Study Program Management of Renewable Building Energy Technology”
- Dual Bachelor Study Program Business Administration for SMEs
- Implementation Report Lithuania
- Piloting Report Austria

Result 5.1
Dual Bachelor's Degree Programs

Modul Manual "Business Administration and Sustainable Management for SMEs"

Prepared by:

Berufsakademie Hamburg

Co-funded by the
Erasmus+ Programme
of the European Union

Dual Bachelor's Study Program Business Administration and Sustainable Management for SMEs

Table of Contents

1 Introduction

The global climate crisis, the advancing environmental destruction and the continuous consumption of the earth's natural resources have led to an intensive discussion about the sustainability of business. Changes in consumer behavior towards a more conscious consumption of sustainable products as well as the political setting of environmental and climate targets (such as through the European Union's Green Deal) present companies with new challenges. Both climate-neutral and sustainable products must be developed, as well as resource-saving processes along the entire value chain. For small and medium-sized enterprises in particular, this structural change is associated with both challenges and opportunities.

"Green innovations" in products and processes are not automatically sustainable. A holistic understanding of ecological, social and economic sustainability and its implementation in companies is required. Sustainable action affects all functions along the value chain, starting with the development of sustainable products, the management of sustainable supply chains, resource-conserving production, and sustainability-oriented marketing. In order to be able to accompany and evaluate such entrepreneurial innovations and transformation processes, it is necessary to have an understanding of the company's internal service production processes and cross-company value chains. Knowledge about the use of environmentally friendly and renewable resources should contribute to finding the basis for entrepreneurial decisions that make economic and ecological sense as well as being ethically responsible.

This course of study is therefore concerned with the acquisition of interdisciplinary competencies for sustainable management in small and medium-sized enterprises (SMEs). This includes a basic education in business administration and sustainability concepts. A consistent sustainability orientation can be an important success factor for SMEs in the future in maintaining and expanding their competitiveness. Since there are generally polypolistic market structures relevant for SMEs, they must therefore have a sound knowledge of business management contexts that enables them to constantly adapt their own range of products and services to changing market conditions.

2 Objectives and didactic conept of the dual bachelor's study program „Business Administration and Sustainable Management for SMEs“

As part of the dual study program "Business Administration and Sustainable Management for SMEs", students acquire comprehensive business skills for analyzing and evaluating entrepreneurial processes. In doing so, they are put in a position to reflect on operational structures, processes and procedures, which they become familiar with from their own perspective within the framework of the dual study program. They learn to do it in a theory-based manner and to apply and transfer their knowledge to these structures, processes and procedures. In this context, they are also qualified to understand the overall entrepreneurial process as part of a complex value creation process that must be designed in a sustainable manner.

As (future) specialists and managers, they therefore also acquire the competence during their studies to systematically record, analyze and evaluate complex business situations on the basis of suitable figures, data and facts and to design business performance processes. On a well-founded business management basis, they are thus able to use the results for improvements, further developments and innovations. These competencies form the basis for a holistic evaluation of corporate decisions with regard to economic, ecological and ethical aspects.

The professional qualification of the students also includes the increasing assumption of operational management and leadership tasks. This requires the consideration of comprehensive technical and interdisciplinary aspects.

2.1 Program Objectives

The following is an overview of the central qualification goals of the study program "Business Administration and Sustainable Management for SMEs":

- Imparting business management competence for the analysis and evaluation of business processes and sustainable entrepreneurial action, especially in small and medium-sized enterprises
- Ability to reflect on business structures, processes and procedures in a theory-based manner, especially with regard to sustainability.
- Ability to apply and transfer business management knowledge to operational structures, processes and procedures

- Development and expansion of the understanding of responsible entrepreneurial action as a component of a sustainable value chain
- Imparting comprehensive business management competencies for the assumption of sustainable management and leadership tasks in SMEs
- Competence to systematically record, analyze and evaluate operating results on the basis of appropriate figures, data and facts, taking sustainability into account
- Ability to analyze operational performance processes and to design them with a view to sustainability
- Ability to use the results for improvements, further sustainable developments and green innovations
- Promotion of personal, methodical and social competence to communicate with relevant operational groups (e.g. business partners, employees, customers, suppliers) to communicate successfully

2.2 Didactic Concept

The design tasks in SMEs demand not only a broad spectrum of business knowledge from junior executives, but also in particular social-communicative, methodological and action competencies. During the course of study, students are therefore increasingly enabled, in smaller groups and with the help of participant-oriented methods, to develop scientifically sound analyses and solution concepts for business management problems, which can be implemented in management and leadership tasks of medium-sized companies, so that they can assume leadership responsibility with increasing professional experience.

The bachelor's degree program "Business Administration and Sustainable Management for SMEs" is geared towards the specifics of a sustainability orientation and the needs of small and medium-sized enterprises. Since there is no closed theoretical concept of sustainable business management for SMEs that can be built upon, the orientation towards sustainability and SME problems is implemented through the design of subject specific core modules, which also address sustainability as well as SME-specific problems and solution approaches from their respective perspectives. The core modules offer a basic and intensive consideration with common business management contents, which are necessary for the assumption of management and leadership tasks as well as the further development of SMEs in the field of sustainability. Furthermore, the specialization options in the third and fourth year of study are suitable to promote the students' competence with regard to the analysis and evaluation of sustainability aspects on the basis of a systematic collection and evaluation of essential information on the one hand but also to deepen personal communication competences on the other hand.

As a dual course of study, the didactic concept is geared towards a theory-based as well as application-oriented teaching of competencies in the course of study and is interlinked with a coordinated practical training in the company.

The courses are organized on a part-time basis, thus enabling students to gain practical experience in the company. Between the course phases, the students are active in practice. This form of organization enables students to reflect on what they have learned in practice between courses and to prepare and follow up courses as part of their independent study.

In order to ensure an intensive acquisition of competences, the courses are predominantly held in small groups of approx. max. 30 students. Even in courses that are designed as "lectures" for larger groups (from experience max. 60 students), the interactive teaching discussion still dominates as a rule. In the smaller groups, participant-activating and cooperative methods such as group work and case studies are used. Within the framework of group work, students are encouraged to bring in practical experience from their own training company and thus to relate theory and practice with the help of the lecturer himself.

The relationship of the practical training components to the course of study is ensured and guided by the practice modules in the form of four reflections on practice and a capstone project.

Reflections on practice are student term papers that are written in the course of the practical training on subjects that are related to the studies at the University. These practical examinations contain concrete tasks and problems of the operational practice, which are to be worked on with the technical and methodical competences acquired during the studies.

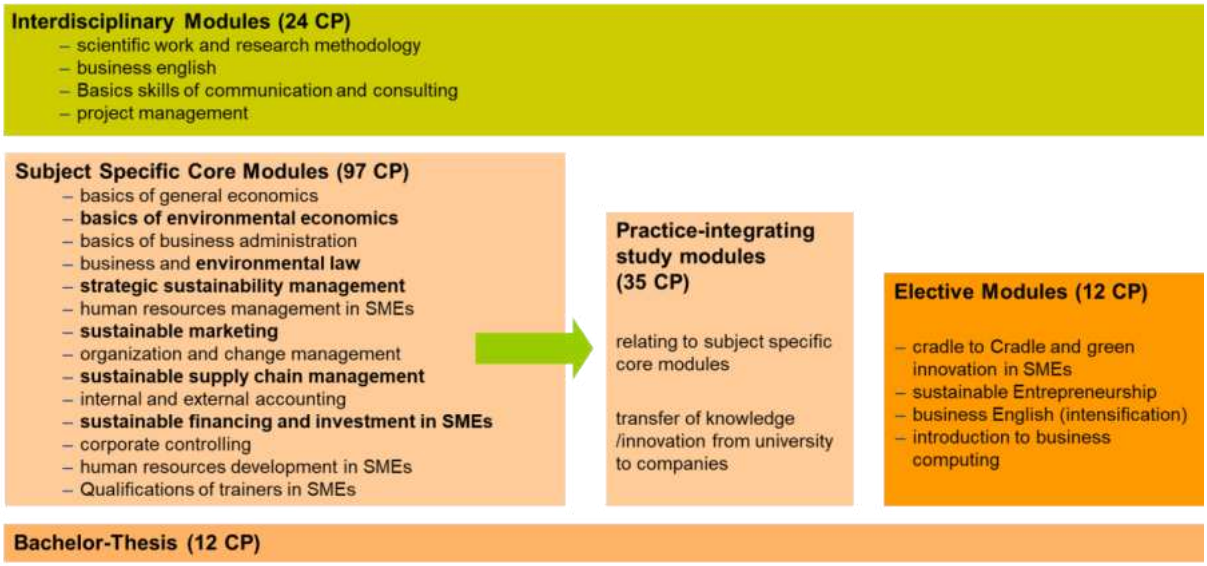
The capstone project comprises a complex operational problem from practice, which is worked on in an application-oriented and, if possible, multidisciplinary manner on the basis of the contents and competencies acquired during the course of study. The work is carried out in student groups (teams) of 4 - 5 participants.

During the preparation of practical modules, students are supervised by teachers from the University.

3 Structure and Sequence of Studies

The structure of the curriculum is geared towards both central business management fields of action, decision-making and design as well as consistent process management that takes into account the sustainability of corporate, business and work processes. It provides students with the necessary fundamentals to recognize business structures in the company, to align themselves with customer needs, to organize processes efficiently, to control them in a goal-oriented manner and to constantly improve them, as well as to actively pursue the goal of sustainability.

The structure is characterized by interdisciplinary, subject-specific, practice-integrating modules as well as elective modules. The Bachelor's thesis is the final module. The structure of the modules is shown in the following figure.



In the first year of the program „Business Administration and Sustainable Management for SMEs“, business management qualifications are taught in the core modules "Basics of general economics", „Basics of Environmental Economics“, "Basics of Business Administration", "Human Resources Management in SMEs" and "Sustainable Marketing" and, in addition, interdisciplinary qualifications are taught in the modules "Scientific Work and Research Methodology" and "Business English". By the end of the first year of study, a first reflection on practice must be prepared in accordance with the module description.

In the second year of study, the basic business qualifications are expanded by completing the core modules "External Accounting", "Sustainable Financing and Investment in SMEs ", Materials management ", "Basics of Commercial and Environmental Law " and " Internal

accounting and basics of business taxation ". The interdisciplinary qualifications are extended by the module "Communication and Consulting". As part of the business part of the program, a practical reflection must be completed in the second year of study in accordance with the module description.

In the third year of study, students complete the core modules "Organization and change management in SMEs", "Strategic Sustainability Management" an „Sustainable Supply Chain Management“ to further build up business skills and qualifications especially with regard to sustainablity. The interdisciplinary qualifications are expanded by the module "Project Management". In addition, the elective module "Cradle to Cradle and green innovation in SMEs " must be completed as a specialization to expand and deepen the business management qualifications. Alternatively, a deepening of the qualification in the field of Business English can be chosen (elective module „Business English (intensification)“). Furthermore, in the third year of study, a further practical reflection and the capstone project must be completed in accordance with the module descriptions.

In the fourth year of study, the modules "Corporate Controlling", "Human Resources Development in SMEs" and "Qualifications of trainers in SMEs" must be completed. In addition, one of the two elective modules "Sustainable Entrepreneurship" or "Introduction to business computing“ must be completed as a specialization to expand and further deepen the business management as well as the sustainability qualifications. By the end of the fourth year of study, the fourth practical reflection must be completed in accordance with the module description.
In the fourth year, students write a Bachelor‘s thesis. This examination performance has a scope of 12 CP.

The company-based part of the dual study program is completed over the entire period of studyin the company or organization with which a study contract has been concluded. The companies are given the opportunity to take into account company or industry-specific features in such a way that, in addition to general fundamentals, special e.g. technical knowledge can also be imparted in the respective trade. During the company period, the companies or organizations provide appropriate support for the study content on the basis of the module descriptions provided by the University.

4 Curriculum Overview: Module List

Module No.	Module / Study unit	Credit Points (CP) Academic year				Workload in hours		Total Hours
		1.	2.	3.	4.	Hours Full-time	Hours Self-studies	
Interdisciplinary modules								
BWÜ 1	**Scientific work and research methodology**	**6**				**48**	**102**	**150**
BWÜ 1.1	Scientific work					24	51	
BWÜ 1.2	Research methodology and statistics					24	51	
BWÜ 2	**Business english**	**5**				**64**	**61**	**125**
BWÜ 2.1	Business English					64	86	
BWÜ 3	**Basics of communication and consulting**		**6**			**52**	**98**	**150**
BWÜ 3.1	Basics of communication and consulting					32	60	
BWÜ 3.2	Presentation					20	38	
BWÜ 4	**Project management**			**5**		**46**	**79**	**125**
BWÜ 4.1	Basics of project management					46	79	
Subject specific core modules								
BWM 5	**Basics of general economics**	**5**				**46**	**79**	**125**
BWM 5.1	Basics of general economics					46	79	
BWM 6	**Basics of environmental economics**	**5**				**46**	**79**	**125**
BWM 6.1	Basics of environmental economics					46	79	
BWM 7	**Basics of business administration**	**5**				**46**	**79**	**125**
BWM 7.1	Basics of business administration					46	79	
BWM 8	**Human resources management in SMEs**	**7**				**72**	**103**	**175**
BWM 8.1	Basics of Human resources management in SMEs					38	54	
BWM 8.2	Personnel management					34	49	
BWM 9	**Sustainable marketing**	**6**				**58**	**92**	**150**
BWM 9.1	Sustainable marketing					58	92	
BWM 10	**External accounting**		**7**			**62**	**113**	**175**
BWM 10.1	Accounting					24	43	
BWM 10.2	Annual financial statement, income statement, and balance sheet					38	70	
BWM 11	**Sustainable financing and investment in SMEs**		**6**			**58**	**92**	**150**
BWM 11.1	Sustainable financing					20	34	
BWM 11.2	Sustainable investment					38	69	
BWM 12	**Materials management**		**6**			**52**	**98**	**150**
BWM 12.1	Basics of materials management and supply					32	53	
BWM 12.2	Basics of warehouse management					20	45	
BWM 13	**Basics of commercial and environmental law**		**6**			**58**	**92**	**150**
BWM 13.1	Basics of commercial law					30	48	
BWM 13.2	Basics of environmental protection law					28	44	

Module No.	Module / Study unit	Credit Points (CP) Academic year				Workload in hours		Total Hours
		1.	2.	3.	4.	Hours Full-time	Hours Self-studies	
BWM 14	**Internal accounting and basics of business taxation**		**7**			**62**	**113**	**175**
BWM 14.1	Cost and performance accounting					38	70	
BWM 14.2	Basics of business taxation					24	43	
BWM 15	**Organization and change management in SMEs**			**7**		**62**	**113**	**175**
BWM 15.1	Basics of organizational management and organizational development					28	51	
BWM 15.2	Change Management in SMEs					34	62	
BWM 16	**Strategic Sustainability Management**			**6**		**52**	**98**	**150**
BWM 16.1	Strategic Sustainability Management					52	98	
BWM 17	**Sustainable Supply Chain Management**			**6**		**52**	**98**	**150**
BWM 17.1	Basics of Sustainable Supply Chain Management					32	60	
BWM 17.2	Sustainable logistics					20	38	
BWM 18	**Corporate Controlling**				**6**	**52**	**98**	**150**
BWM 18.1	Basics of operational corporate planning					16	28	
BWM 18.2	Operational corporate controlling in SMEs					36	70	
BWM 19	**Human resources development in SMEs**				**6**	**48**	**102**	**150**
BWM 19.1	Human resources development in SMEs					48	102	
BWM 20	**Qualifications of trainers in SMEs**				**7**	**72**	**103**	**175**
BWM 20.1	Qualifications of trainers in SMEs					72	103	
Elective modules (two out of four)								
BWM 21	**Cradle to Cradle and green innovation in SMEs**			**6**		**52**	**98**	**150**
BWM 21.1	Cradle to Cradle					12	60	
BWM 21.2	Innovation management					40	38	
BWM 22	**Sustainable Entrepreneurship**				**6**	**52**	**98**	**150**
BWM 22.1	Basics of sustainable entrepreneurship					16	30	
BWM 22.2	Start-up and succession of sustainable business					36	68	
BWM 23	**Business English (intensification)**			**6**		**52**	**98**	**150**
BWM 23.1	Business English (intensification)					52	98	
BWM 24	**Introduction to business computing**				**6**	**52**	**98**	**150**
BWM 24.1	Introduction to business computing					28	53	
BWM 24.2	Digitization of business processes					24	45	
Practical modules						**Full-time**	**Time in practice**	
BPR 26	**Reflections on practice 1**	**5**				**4**	**121**	**125**
BPR 27	**Reflections on practice 2**		**7**			**4**	**171**	**175**
BPR 28	**Reflections on practice 3**			**8**		**4**	**196**	**200**
BPR 29	**Capstone project**			**7**		**32**	**143**	**175**
BPR 30	**Reflections on practice 4**				**8**	**4**	**196**	**200**

Module No.	Module / Study unit	Credit Points (CP) Academic year				Workload in hours		Total Hours
		1.	2.	3.	4.	Hours Full-time	Hours Self-studies	
Bachelor's thesis								
BWM 31	**Bachelor's thesis**				**12**			**300**
CP p.a.		**45**	**45**	**45**	**45**			
Total hours (contact studies and self-study)						**1260**	**2113**	
Total hours of practical elements (practice hours)								**827**
Total hours of the bachelor's thesis								**300**
Total hours of the course of study						**4500**		
Total CP of the course of study		**180**						

5 Module Handbook

5.1 Interdisciplinary Modules

Module No./Code	BWÜ 1
Module name	Scientific work and research methodology
If necessary, courses as part of module	BWÜ 1.1 Scientific work BWÜ 1.2 Research methodology and statistics
Module's scope	Scientific work • Time management, motivation, and concentration • Self-study during the course • Basics of knowledge acquisition • Basics of scientific work • Acquisition, analysis, and evaluation of information • Structure of scientific work • Formal requirements of scientific work Research methodology and statistics • Basics of empirical social research • Operationalization and measurement • Data acquisition techniques • Data evaluation and interpretation • Basic statistics
Learning outcomes	Students should: • know strategies for learning and working during the course and be able to define and apply them according to their own needs • know techniques of scientific work and be able to apply them in the context of their own study during the course • have the ability to critically reflect on the principles of scientific work and apply them when preparing their own studies (homework, reflections on practice, and bachelor's thesis) as part of the course • understand the basics of research methodology in the business context • be able to use and evaluate various survey instruments to identify problems that may occur in an enterprise • be able to design and conduct their own research
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (48 full-time course / 102 self-study)
Module type (obligatory, optional, etc.)	Obligatory module

Module's applicability	Due to the interdisciplinary nature of this module, it is required for basic and elective modules (BWM 5 – BWM 22), and especially for practical modules (BPR 23 – BPR 27), as well as for Bachelor's thesis BWM 31
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Kornmeier, M.: Wissenschaftstheorie und Wissenschaftliches Arbeiten: Eine Einführung für Wirtschaftswissenschaftler. Heidelberg • Atteslander, P.: Methoden der empirischen Sozialforschung. Berlin • Eisend, M./Kuß, A.: Grundlagen empirischer Forschung. Zur Methodologie in der Betriebswirtschaftslehre. Wiesbaden Recommended additional reading (current edition in each case): • Schnell, R./Hill, P. B./Esser, E.: Methoden der empirischen Sozialforschung. München • Flick, U./von Kardorff, E./Steinke, I. (Hrsg.): Qualitative Forschung. Reinbek • Schuster, T. / Liesen, A.: Statistik für Wirtschaftswissenschaftler: Ein Lehr- und Übungsbuch für das Bachelor-Studium. Berlin

Module No./Code	BWÜ 2
Module name	Business English
If necessary, courses as part of module	BWÜ 2.1 Business English
Module's scope	• Business or pleasure • Information Exchange • People Skills: Rapport • Management Scenario: Cultural Clash • Problems on the phone • Leading Meetings • People Skills: Coaching • Management Scenario: Coach Crash • Promoting your ideas • Relationship-Building
Learning outcomes	Students should: • be able to use basic vocabulary to describe their workplace • be able to describe and reflect on various situations in the enterprise and how they relate to specific applications • be able to present and discuss the challenges associated with making phone calls • be able to take the role of a meeting host • be able to promote and analyze their own ideas • be able to create and reflect on business relationships • be able to analyze and evaluate different management scenarios
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (64 full-time course / 86 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	Participation in this module is necessary to take part in elective module BWM 23. As an interdisciplinary module, it serves the acquisition of soft skills and helps in understanding English specialist texts during the course.
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N..
Course language	English
Exam type / requirements for awarding academic achievement	Written exam (90 min) and oral exam (20 min)

Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Powell, M./Allison, J.: In Company 3.0 – Upper Intermediate Student's Book Pack (B2+). Macmillan Publishing. London Recommended additional reading (current edition in each case): • Schofield, J.: Double Dealing. Intermediate Business English Course. Summertown Publishing ltd. • Stock (Hrsg.): Business Spotlight. Englisch für den beruflichen Erfolg. Quarterly. München

Module No./Code	BWÜ 3
Module name	Communication and consultancy
If necessary, courses as part of module	BWÜ 3.1 Basics of communication and consulting BWÜ 3.2 Presentation
Module's scope	Basics of communication and consulting • Basics of communication and rhetoric • Creating various conversational situations • Basics of customer-oriented consulting • Basics of negotiation, Harvard Model • Special features of intercultural communication in a business context Presentation • Psychological basis of attention and perception • Planning, implementing, and evaluation of presentations in the context of an enterprise
Learning outcomes	Students should: • know the basics of communication and rhetoric and use them as a framework for reflection on discussions and consultancy offered in practice • analyze and interpret conversations in a holistic way • be able to provide consultancy in a communicative way • apply the basics of negotiations • take into account the importance of cultural identities and differences in the context of an enterprise • analyze and evaluate intercultural communication and interaction in an enterprise • prepare and give presentations independently
Academic Year (SJ)	2. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory,	Obligatory module
Module's applicability	As an interdisciplinary module, it serves the acquisition of soft skills, which are to be used primarily in module BWÜ 4 (basics of project management) and to meet the requirements of the presentation exam in practical module BPR 26 (Capstone project).
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.

Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Schulz v. Thun, F.: Miteinander reden, Bd. 1: Störungen und Klärungen, allgemeine Psychologie der Kommunikation. Reinbek • Stiller, M.: Kundenberatung im persönlichen Verkauf. Wiesbaden • Seifert, J. W.: Visualisieren, Präsentieren, Moderieren. Offenbach Recommended additional reading (current edition in each case): • Schulz v. Thun, F. u.a..: Miteinander reden. Kommunikationspsychologie für Führungskräfte. Reinbek • Fischer, R. u.a.: Das Harvard-Konzept. Sachgerecht verhandeln, erfolgreich verhandeln. Frankfurt • Ertelt, B.-J. / Schulz, W. E.: Handbuch Beratungskompetenz: Mit Übungen zur Entwicklung von Beratungsfertigkeiten in Bildung und Beruf. Wiesbaden • Lewicki, R. J. u.a.: Verhandeln mit Strategie. Das große Handbuch der Verhandlungstechniken. Zürich

Module No./Code	BWÜ 4
Module name	Basics of project management
If necessary, courses as part of module	BWÜ 4.1 Basics of project management
Module's scope	• Basics of project management • Project planning along with the planning of its structure, course, and schedule, resource planning and budgeting • Project management and control with task allocation
Learning outcomes	Students should: • know and use the methods of project planning, management, and control • be able to structure and plan business tasks as a project, • be able to identify, analyze, and evaluate problems when running project teams • use software support in project management • present project results
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125 (46 full-time course / 79 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	This is an interdisciplinary module, completion of which is a condition for entering practical module BPR 26 (Capstone project).
Requirements for participation	BWÜ 3
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -

Literature	Obligatory reading (latest edition in each case): • Mayrshofer, D./Kröger, H. A.: Prozesskompetenz in der Projektarbeit. Ein Handbuch mit vielen Praxisbeispielen für Projektleiter, Prozessbegleiter und Berater. Hamburg • Kraus, G./Westermann, R.: Projektmanagement mit System. Organisation, Methoden, Steuerung. Wiesbaden Recommended additional reading (current edition in each case): • Braehmer, U.: Projektmanagement für kleine und mittlere Unternehmen. München

5.2 Subject Specific Core Modules

Module No./Code	BWM 5
Module name	Basics of general economics
If necessary, Courses as part of module	BWM 5.1 Basics of general economics
Module's scope	• Basic concepts of general economics, methods, economic systems • Market behavior, adjustment processes, market failures • Full competition, price fixing, market power • Household behavior • State behavior and influence, macroeconomic goals • Economic policy instruments • Basics of Sustainability
Learning outcomes	Students should: • understand and conduct critical discussions about the role of enterprises, households, and the government in national economy • be able to describe the mechanism of the economic cycle • assess the consequences of market forms and price determinants in various industries • be able to analyze the emergence of various market situations • be able to analyze the strategic competitive behavior of competitors and demonstrate the consequences in individual industries • identify and critically analyze market failures and abuses • demonstrate the instruments of state economic policy and their impact on enterprises
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125 (46 full-time course / 79 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major.
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.

Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 %
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Baßeler, U./Heinrich, J./Utrecht, B.: Grundlagen und Probleme der Volkswirtschaft, Stuttgart • Engelkamp, P./Sell, F. L.: Einführung in die Volkswirtschaftslehre. Berlin, Heidelberg, New York Recommended additional reading (current edition in each case): • Mankiw, N.G./Taylor, M.P.: Grundzüge der Volkswirtschaftslehre. Stuttgart • Wiesemeth, H.: Umweltökonomie: Theorie und Praxis im Gleichgewicht. Berlin, Heidelberg, New York u. a.

Module No./Code	BWM 6
Module name	Basics of environmental economics
If necessary, courses as part of module	BWM 6.1 Basics of environmental economics
Module's scope	• Economic theoretical foundations of environmental economics • External effects, market failure • Internalization of external effects • Characteristics of environmental goods • Instruments of environmental policy: Pigou tax, Coase theorem, liability law • International environmental problems and approaches to international environmental policy using the example of emissions trading
Learning outcomes	Students should: • describe the theoretical foundations of environmental economics and explain environmental economic relationships. • present the economic problem of "external effects" and explain the resulting allocation problems. • explain and critically discuss different concepts for the internalization of external effects (e.g. Coase theorem, liability law and Pigou tax). • discuss and evaluate environmental policy instruments. • discuss economic policy aspects of sustainability.
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125 (46 full-time course / 79 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major.
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min

Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Endres, A./Rübbelke, D.: Umweltökonomie. 5. erweiterte und aktualisierte Aufl., Stuttgart 2022 Recommended additional reading (current edition in each case): • Perman, R./Ma, Y./McGilvray, J./Common, M. S.: Natural Resources and Environmental Economics. 4th Revised edition, London 2013 • Tietenberg/ T. Lewis, L.: Environmental and Natural Resource Economics. 11th edition, London 2018

Module No./Code	BWM 7
Module name	Basics of business administration
If necessary, courses as part of module	BWM 7.1 Basics of business administration
Module's scope	• Basic concepts and subject of business economics • Basic functions of an enterprise • Basics of procurement, production, and sales • Basics of accounting and finance • Enterprise and its surroundings; Stakeholder vs. Shareholder; conflicting goals with regard to sustainability • Basics of business management • Basics of organization
Learning outcomes	Students should: • understand the management of enterprises within the subject of business economics, • be able to assess the quantitative and qualitative characteristics of SMEs • be able to analyze the basic functions of the business in the cooperating companies of the dual study program • use accounting as an important source of information for business decisions • classify basic concepts and compare investment and financial planning instruments • be able to distinguish and analyze groups of stakeholders and assess their impact on the operation of a company • explain the conflicting goals of stakeholders and shareholders with regard to sustainability and critically discuss possible solutions • be able to define, classify, and apply tasks related to company management at various levels • distinguish between basic forms of organisation management and process management in SMEs
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125 (46 full-time course / 79 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major.
Requirements for participation	-none-
Person responsible for the module	N.N.

Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Wöhe, G.: Einführung in die Allgemeine Betriebswirtschaftslehre. München: Verlag Franz Vahlen Recommended additional reading (current edition in each case): • Vahs, D. / Schäfer-Kunz, J.: Einführung in die Betriebswirtschaftslehre. Stuttgart • Thommen, J.-P./Achleitner, A.-K.: Allgemeine Betriebswirtschaftslehre. Wiesbaden

Module No./Code	BWM 8
Module name	Human resources management in SMEs
If necessary, courses as part of module	BWM 8.1 Basics of Human resources management in SMEs BWM 8.2 Personnel management
Module's scope	Human resource management in SMEs • Tasks and objectives of personnel management in SMEs • Quantitative and qualitative personnel requirement planning • Methods and instruments of personnel recruitment • Personnel marketing and employer branding in SMEs • Instruments of personnel planning • Workplace and remuneration design • Basics of personnel controlling Personnel management • Tasks and goals of personnel management • Basics and approaches of personnel management research • Leadership approaches and concepts • Motivation theoretical approaches to the description and explanation of employee performance and behavior
Learning outcomes	Students should: • be able to present the basics of human resource management and assess their importance for SMEs • be able to describe and implement HR planning methods for SMEs • be able to compare internal and external recruitment methods and apply them to the challenges present in companies from the SME sector • be able to identify and critically assess the possibilities and limitations of personal marketing and Employer Branding for SMEs • be able to distinguish between instruments of personnel planning • be able to demonstrate the importance of designing workplace and remuneration for SMEs • be able to present the basics of human resource management and provide a general outline of leadership studies and use their results in a company • be able to apply leadership techniques and tools in SMEs • be able to critically discuss motivational theories used to explain employee performance/behavior • be able to analyze and evaluate employee behavior in operational situations based on motivational theories

Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (72 full-time course / 103 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	Participation in this module is necessary to take part in basic module BWM 18.
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.9 %
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Jung, H.: Personalwirtschaft, München • Berthel, J. / Becker, F. G.: Personalmanagement. Stuttgart • Becker, M.: Personalentwicklung – Bildung, Förderung und Organisationsentwicklung in Theorie und Praxis. Stuttgart • Lindner-Lohmann, D. / Lohmann, F. / Schirmer, U.: Personalmanagement. Heidelberg Recommended additional reading (current edition in each case): • Bröckermann, R./Müller-Vorbrüggen, M. (Hrsg.): Handbuch Personalentwicklung – Die Praxis der Personalbildung, Personalförderung und Arbeitsstrukturierung. Stuttgart • Ryschka, J./Solga, M./Mattenklott (Hrsg.): Praxishandbuch Personalentwicklung – Instrumente, Konzepte, Beispiele. Wiesbaden • Malik, F.: Führen Leisten Leben. Wirksames Management für eine neue Zeit. Stuttgart, München 2000 • Thom, N./Zaugg, R. J. (Hrsg.): Moderne Personalentwicklung – Mitarbeiterpotenziale erkennen, entwickeln und fördern. 2., aktualisierte Auflage, Wiesbaden 2007

Module No./Code	BWM 9
Module name	Sustainable Marketing
If necessary, courses as part of module	BWM 9.1 Sustainable Marketing
Module's scope	• Fundamentals of Sustainability • Legal foundations of corporate social responsibility, corporate governance, ESG, sustainability reporting, EU taxonomy • Basics and instruments of the sustainable marketing mix • Sustainability-oriented communication policy
Learning outcomes	Students should: • present basic goals and tasks of a sustainability approach in business administration and especially in marketing, • analyze relationships between goals in the ecological, economic, and social/societal spheres, • explain and discuss corporate social responsibility (CSR) and consumer social responsibility (ConSR) • describe the basic legal implications of corporate social responsibility, corporate governance and corporate compliance • develop appropriate marketing concepts to achieve sustainability-oriented marketing strategies, • analyze, compare, systematize and evaluate the suitability of selected marketing instruments for achieving sustainability-oriented marketing goals in the context of price, product, performance, distribution and communication policies, human resources policies • focus on creating credibility and building trust as well as a corresponding corporate image within the framework of sustainability-oriented communication policy • use suitable instruments within the framework of sustainability-oriented communication campaigns • critically discuss the opportunities and risks of sustainability-oriented marketing
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (58 full-time course / 92 self-study)
Module type (obligatory, optional, etc.)	Obligatory module

Module's applicability	
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 %
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Ernst, D. / Sailer, U. / Gabriel, R. (Hrsg.): Nachhaltige Betriebswirtschaft. München: UVK Verlag • Grunwald, G. / Schwill, J.: Nachhaltigkeitsmarketing: Grundlagen - Gestaltungsoptionen - Umsetzung. Stuttgart: Schäffer-Poeschel Verlag. Recommended additional reading (current edition in each case): • Balderjahn, I. (2021). Nachhaltiges Management und Konsumentenverhalten (2., vollständig überarbeitete Auflage.). München: UVK Verlag • Bauer, M. J. / Sobolewski, S. (2022): Grüne Marketing-Kommunikation: Green Communication im Marketing-Mix nachhaltigkeitsorientierter Unternehmen. Wiesbaden: Springer Fachmedien Wiesbaden.

Module No./Code	BWM 10
Module name	External accounting
If necessary, Courses as part of module	BWM 10.1 Accounting BWM 10.2 Annual financial statement, income statement, and balance sheet
Module's scope	Accounting • Goals, tasks, and basic concepts of accounting • Double accounting system • Accounting for significant business transactions in SMEs • Preparation of the annual financial statement Annual financial statement, income statement, and balancing • Balancing assets and capital of a company • Income statement • Tasks and structure of a balance sheet
Learning outcomes	Students should: • be able to describe the tasks and goals of accounting • explain the principles of the double accounting system • be able to use accounting records and techniques of registering important business transactions on accounts • be able to present the process of preparing an annual financial statement andthink critically about its significance and consequences • be able to explain the relationships between elements of an annual financial statement • be able to analyze and evaluate annual financial statements based on selected key parameters.
Academic Year (SJ)	2. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (72 full-time course / 103 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	Participation in this module is necessary to take part in basic modules BWM 14 and BWM 18.
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min

Grade's contribution to the total grade	3.8 % (7/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Coenenberg, A. G.: Einführung in das Rechnungswesen. Grundlagen der Buchführung und Bilanzierung. Stuttgart • Handelsgesetzbuch HGB. Beck-Texte im dtv. München Recommended additional reading (current edition in each case): • Döring, U. / Buchholz R.: Buchhaltung und Jahresabschluss. Mit Aufgaben Lösungen und Klausurtraining. Berlin

Module No./Code	BWM 11
Module name	Sustainable financing and investment
If necessary, courses as part of module	BWM 11.1 Sustainable financing BWM 11.2 Sustainable investment
Module's scope	Sustainable financing • Goals, tasks, and basic concepts related to financing • Financial planning • Forms of internal and external financing • Shareholder-Value, Sustainable corporate value • Risk Management; Value-in-use analysis Sustainable investment • Goals, tasks, and basic concepts related to investments • Investment planning • Static and dynamic investment calculation procedures
Learning outcomes	Students should: • be able to present the goals, tasks, and basic concepts related to financing • be familiar with the tension between sustainability and the quest for returns • be able to present the basic relationships as well as evaluate and choose instruments to finance companies • be able to develop financial plans and determine the resulting liquidity or capital needs • recognize the importance of risk management for sustainable financial management • be able to present the goals, tasks, and basic concepts related to investments • be able to determine investment needs • be able to use Investment appraisal instruments to solve decision problems • be able to apply and critically evaluate static and dynamic procedures related to the investment account, • recognize the opportunities and risks of investment appraisal • be able to identify and critically discuss basic financing options for SMEs • can explain why institutional investors prefer sustainable investments
Academic Year (SJ)	2. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (72 full-time course / 103 self-study)

Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	Participation in this module is necessary to take part in basic module BWM 14.
Requirements for participation	
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Brealey, R./Myers, C.: Principles of Corporate Finance. New York • Becker, H. P. / Peppmeier, A.: Investition und Finanzierung. Grundlagen der betrieblichen Finanzwirtschaft. Wiesbaden Recommended additional reading (current edition in each case): • Perridon, L. / Steiner, M. / Rahtgeber, A.: Finanzwirtschaft der Unternehmung. München • Zantow, R. / Dinauer, J. / Schäffler, C.: Finanzwirtschaft des Unternehmens. Die Grundlagen modernen Finanzmanagements. München

Module No./Code	BWM 13
Module name	Basics of commercial and labor law
If necessary, courses as part of module	BWM 13.1 Basics of commercial law BWM 13.2 Basics of environmental protection law
Module's scope	Basics of commercial law • Commercial contract law • Contracts for specific work • General terms and conditions of trade • Court proceedings by writ-of-payment and complaint proceedings, enforcement proceedings • Commercial law and company law Basics of environmental protection law • public and private environmental protection law, • basic concepts of plant-, substance- and environmental elementsrelated protective laws (water law, soil protection law, waste law, immission control law) • General and special environmental administrative law • Environmental liability and environmental criminal law • Regulatory offences law
Learning outcomes	Students should: • be able to present the basic principles and structures of the German legal system • be able to assess the regularity of legal transactions • critically discuss key aspects of family and inheritance law and consider its impact on ownership in SMEs • define and evaluate the legal terms of purchase and service contracts • be able to describe and evaluate the elements and legal effects of general terms and conditions of trade • be able to identify the provisions of commercial and company law and assess their importance for SMEs • be able to explain basic rules and guidelines of the public environmental protection law and apply them in specific cases, • be able to describe the basics of environmental responsibility regulations, • be able to describe general guidelines of the criminal law and law of administrative offences, • know the special features of the immission control law, waste law, water law, nature conservation law and the legal protection in environmental law

Academic Year (SJ)	2. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (58 full-time course / 92 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major.
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Brox, H./Rüthers, B./Henssler, M.: Allgemeiner Teil des BGB. München • Brox, H./Rüthers, B./Henssler, M.: Allgemeines Schuldrecht. München • Kahl W./Gärditz, K. F.: Umweltrecht. München Recommended additional reading (current edition in each case): • Kluth, W./Smeddinck, U. (Hrsg.): Umweltrecht. Ein Lehrbuch. Berlin

Module No./Code	BWM 14
Module name	Internal ccounting and basics of business taxation
If necessary, courses as part of module	BWM 14.1 Cost and performance accounting BWM 14.2 Basics of business taxation
Module's scope	Cost and performance accounting • Tasks, goals, and basic concepts related to cost and performance accounting • Structure, tasks, and procedures regarding cost division by type, cost centers, and settlement of cost drivers • Types of cost accounting systems Tasks and procedures for full, partial, and planned cost accounting Basics of business taxation • Basic concepts of business taxation Types of single taxes • General guidelines of tax procedural law • Impact of taxes on company decisions
Learning outcomes	Students should: • be able to present the basics, tasks, and goals of cost and performance accounting • be able to distinguish the basic concepts of cost and performance accounting, • be able to identify, analyze, and systematize relevant types of costs, • be able to cost centers and distribute primary and secondary costs, and take corresponding surcharge rates into account. • be able to present a method for settling cost drivers and create a cost settlement sheet in a company • be able to distinguish between settlement methods and use them to determine the prices offered, • be able to present the short-term importance of an income statement for business management, • be able to distinguish and apply various cost accounting systems, in particular planned cost accounting • be able to describe the structure of the tax system, types of taxes and taxation procedures • be able to distinguish and apply appropriate types of single taxes • be able to identify and assess the impact of taxes on business decisions regarding location, legal form, investments, and financial matters
Academic Year (SJ)	2. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7

Total hours	175 (62 full-time course / 113 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	Participation in this module is necessary to take part in basic module BWM 18.
Requirements for participation	Participation in basic modules BWM 10 and BWM 11
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Däumler, K.-D. / Grabe, J.: Kostenrechnung 1 – Grundlagen. Mit Fragen und Aufgaben, Antworten und Lösungen, Testklausuren. Herne • Breithecker, V.: Einführung in die Betriebswirtschaftliche Steuerlehre. Mit Fallbeispielen, Übungsaufgaben und Lösungen Recommended additional reading (current edition in each case): • Däumler, K.-D. / Grabe, J.: Kostenrechnung 2 – Deckungs-beitragsrechnung. Mit Fragen und Aufgaben, Antworten und Lösungen, Testklausuren. Herne • Buchholz, L. / Gerhards, R.: Internes Rechnungswesen. Kosten- und Leistungsrechnung, Betriebsstatistik und Planungsrechnung. Berlin, Heidelberg • Nickenig, K.: Praxislehrbuch Steuerrecht. Schneller Einstieg in die gesetzlichen Grundlagen. Wiesbaden

Module No./Code	BWM 15
Module name	Organization and change management
If necessary, courses as part of module	BWM 15.1 Basics of organizational management and organizational development BWM 15.2 Change management in SMEs
Module's scope	Basics of organizational theory and organizational development • Tasks, goals, and basic concepts related to organizational theory • Basics of process structure and organization • Structural and organizational characteristics of SMEs • Goals, procedures, and instruments of process management • Tasks, goals, and basic concepts related to organizational development Change Management in SMEs • Theories of organizational changes in companies • Goals and theories related to change management • Strategy, organizational structure, corporate culture, and technology as areas of activity in change management • Obstacles and success factors of change management • Characteristics of change management in SMEs
Learning outcomes	Students should: • be able to discuss tasks, goals, and basic concepts related to organizational theory • be able to present and apply the basics of process structure and organization • be able to compare and critically discuss characteristic organizational features of SMEs • be able to present and apply goals, procedures, and instruments of process management • analyze and discuss tasks, goals, and basic concepts related to organizational development • be able to differentiate and evaluate theories of organizational changes in companies • be able to present goals and theories related to change management • be able to analyze and assess strategy, organizational structure, corporate culture, and technology as areas of activity in change management • be able to describe and analyze the obstacles and success factors of change management • be able to identify and evaluate the characteristics of change management in SMEs
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ

Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (62 full-time course / 113 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.7 % (7/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Vahs, D.: Organisation ein Lehr- und Managementbuch. Stuttgart • Lauer, T.: Change-Management. Grundlagen und Erfolgsfaktoren. Berlin, Heidelberg Recommended additional reading (current edition in each case): • Schmelzer, H. J. / Sesselmann, W.: Geschäftsprozessmanagement in der Praxis. Kunden zufrieden stellen, Produktivität steigern, Wert erhöhen. München

Module No./Code	BWM 16
Module name	Strategic Sustainability Management
If necessary, courses as part of module	BWM 16.1 Strategic Sustainability Management
Module's scope	• Basics of Sustainability • Legal foundations of corporate social responsibility, corporate governance, ESG, sustainability reporting, EU taxonomy • Fundamentals of strategic management • Approaches and instruments of external analysis in strategic planning • Approaches and instruments of internal analysis • Strategy development, planning and implementation, • Ethical foundations of corporate management, mission statement and culture
Learning outcomes	Students should: • present management in a differentiated way as a comprehensive planning, management and control process, • explain different types of strategy, • explain methods for strategy analysis and development • describe the areas of strategic sustainability analysis • explain methods of internal and external strategic sustainability analysis • explain methods of operational sustainability analysis • identify and analyze resonance, relevance, resilience and reputation as success factors of sustainable corporate development • understand corporate development as a process that strives for the realization of a sustainability vision, taking into account a sustainable corporate mission statement as an expression of the set of values and norms, • describe and develop ethical principles of sustainable corporate management, • identify and interpret the essential characteristics of a sustainable corporate culture • critically discuss the concept of shared value
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (62 full-time course / 113 self-study)

Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Bea, F. / Haas, J.: Strategisches Management. München • Wieland, J. (Hrsg.): Creating shared value - concepts, experience, criticism. Cham • Hahn, R.: Sustainability Management. Global Perspectives on Concepts, Intruments and Stakeholders. Fellbach Recommended additional reading (current edition in each case): • Ernst, D. / Sailer, U. / Gabriel, R. (Hrsg.): Nachhaltige Betriebswirtschaft. München • Balderjahn, I. Nachhaltiges Management und Konsumentenverhalten. München

Module No./Code	BWM 17
Module name	Sustainable supply chain management
If necessary, courses as part of module	BWM 17.1 Basics of sustainable supply chain management BWM 17.2 Sustainable logistics
Module's scope	Basics of sustainable supply chain management • Tasks, goals, and basic concepts related to supply chain management • Legal framework (Supply Chain Due Diligence Act, Due Diligence Guidance for Responsible Supply Chains (OECD)). • Complexity and risk management of supply chains • Transparency in supply chains and strategic cooperation with suppliers • Reactive management of supply chain risks vs. proactive management of sustainable products • Environmental and social challenges in the supply chain Sustainable logistics • Tasks, goals, and basic concepts related to logistics • Logistics strategy and logistics controlling • Ecological and economic effects of logistics strategies, processes and technologies • Digital technologies for sustainable supply chain management and logistics
Learning outcomes	Students should: • be able to discuss tasks, goals, and basic concepts related to supply chain management and logistics • explain the legal framework of sustainable supply chains • be able to describe the complexity of global supply chains and to explain the resulting need for transparency • recognize economic, ecological and social problem areas and are able to locate them in the supply chain process • present possibilities for improving the supply chain and logistics with regard to sustainability and discuss their prerequisites and consequences against the background of different interests (e.g. purchasing: low costs, negative ecological impact) • discuss possible applications and limits of digitalization in supply chain management and logistics with regard to improving sustainability
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6

Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major.
Requirements for participation	Participation in basic module BWM 12
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.7 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Simchi-Levvi, D.; Kaminsky, P.; Simchi-Levi, E.: Designing and Managing the Supply Chain. New York • Schulte, C.: Logistik. Wege zur Optimierung der Supply Chain. München • Ernst, D. / Sailer, U. / Gabriel, R. (Hrsg.): Nachhaltige Betriebswirtschaft. München: UVK Verlag Recommended additional reading (current edition in each case): • Werner, H.: Supply Chain Management: Grundlagen, Strategien, Instrumente und Controlling. Wiesbaden • Hahn, R.: Sustainability Management. Global Perspectives on Concepts, Intruments and Stakeholders. Fellbach

Module No./Code	BWM 18
Module name	Corporate Controlling
If necessary, courses as part of module	BWM 18.1 Basics of operational corporate planning BWM 18.2 Operational corporate controlling in SMEs
Module's scope	Basics of operational corporate planning • Tasks, goals, and basic concepts related to operational corporate planning • General guidelines for cost planning • Operational planning process • Budgeting methods and instruments Operational corporate controlling in SMEs • Tasks, goals, and basic concepts of operational corporate controlling • Operational control in a company, analysis of key figures and key figure systems • Methods and instruments of operational business management • Characteristic features of corporate controlling in SMEs
Learning outcomes	Students should: • be able to present the tasks, goals, and basic concepts of operational corporate planning at the and classify them in terms of operational corporate controlling • be able to describe and take into account the general guidelines for cost planning • be able to analyze and evaluate the operational corporate planning process • be able to differentiate and choose budgeting methods and instruments • be able to discuss the tasks, goals, and basic concepts in the area of operational corporate controlling • be able to evaluate and apply operational corporate control tools in a company • be able to select and analyze key figures as well as evaluate and apply key figure systems • be able to present and apply the methods and instruments of operational business management • critically discuss the characteristic features of corporate controlling in SMEs
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	

Requirements for participation	Participation in basic modules BWM 10 and BWM 14
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Horváth, P./Gleich, R./Seiter, M.: Controlling. München • Scheld, G. A.: Controlling im Mittelstand, Band 3: Operatives Unternehmenscontrolling. Berlin Recommended additional reading (current edition in each case): • Rieg, R.: Planung und Budgetierung. Wiesbaden

Module No./Code	BWM 19
Module name	Human resources development in SMEs
If necessary, courses as part of module	BWM 19.1 Human resources development in SMEs
Module's scope	• Tasks, goals, and basic concepts in the field of human resources development • Structure of human resources development • The need for personnel development, organization analysis, task analysis, and personnel analysis • Objectives, methods, and instruments for human resources development • Controlling and evaluation of human resources development
Learning outcomes	Students should: • be able to present the tasks, goals, and basic concepts in the field of human resources development • be able to analyze and evaluate the structure of staff development • be able to determine the need for personnel development • be able to analyze and assess the goals and framework conditions of companies • be able to analyze critically and discuss issues related to the creation of workplaces and positions • be able to determine and assess employees' current and future results • be able to present and critically discuss the objectives, methods, and instruments for personel development • be able to describe and apply staff development controlling tools • be able to assess human resources development in a company
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (48 full-time course / 102 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major.
Requirements for participation	Participation in basic module BWM 8
Person responsible for the module	N.N.

Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Ryschka, J. / Solga, M. / Mattenklott, A. (Hrsg.): Praxishandbuch Personalentwicklung. Instrumente, Konzepte, Beispiele. Wiesbaden Recommended additional reading (current edition in each case): • Becker, M.: Personalentwicklung. Bildung, Förderung und Organisationsentwicklung in Theorie und Praxis. Stuttgart

Module No./Code	BWM 20
Module name	Qualification of trainers in SMEs
If necessary, courses as part of module	BWM 20.1 Qualification of trainers in SMEs
Module's scope	Qualification of trainers in SMEs • Checking training requirements and training planning • Preparation of trainings and employment of apprentices • Conducting training • Completing training
Learning outcomes	Students should: • be able to verify the basic requirements for training in a company in terms of professional and educational criteria as well as legislation • be able to identify and evaluate the possibilities of training planning • be able to create and critically discuss the preparation of a training program in terms of professional and educational issues • be able to critically discuss, select, and employ trainees • be able to distinguish and apply training methods and instruments • be able to plan, apply, and evaluate progress monitoring activities • be able to analyze and evaluate diverse target groups • be able to plan and implement training completion in accordance with the company, professional, and educational criteria • be able to identify career opportunities and carry out systematic staff development
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (72 full-time course / 103 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major.
Requirements for participation	Participation in basic module BWM 19
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.

Course language	German
Exam type / requirements for awarding academic achievement points	Written exam, 180 min and practical examination with an expert discussion
Grade's contribution to the total grade	3.7 % (7/180)
Teaching and learning methods	Lectures, practical classes, seminar, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Ruschel, A. / Jüttemann, S.: Arbeits- und Berufspädagogik für Ausbilder in vier Handlungsfeldern, Herne • Brand, U. / Buschfeld, D. / Esser, F.-H. et. al.: Sackmann – das Lehrbuch für die Meisterprüfung Teil IV: Berufs- und Arbeitspädagogik, Ausbildung der Ausbilder mit Lernportal. Düsseldorf Recommended additional reading (current edition in each case): • Becker, M.: Personalentwicklung. Bildung, Förderung und Organisationsentwicklung in Theorie und Praxis. Stuttgart

5.3 Elective Modules

Module No./Code	BWM 21
Module name	Cradle to Cradle and green innovation in SMEs
If necessary, courses as part of module	BWM 21.1 Cradle to Cradle BWM 21.1 Innovation management
Module's scope	Cradle to Cradle • Basics of Circular economy, biosphere circular, technosphere circular • Cradle to Cradle approach • Cradle to Cradle design concept Innovation management • Tasks, goals, and basic concepts in the field of innovation management • Innovation strategy with regard to sustainability • Innovation policy • Innovation processes • Technology management • Legal aspects of innovation management • Creating green innovation • Structural features of innovation in SMEs • Planning, implementing, and control of innovation
Learning outcomes	Students should: • describe the basics of the environmental and circular economy debate • explain how sustainability and circular economy actions align with vision, strategy and sustainability programmes. • understand the cradle to cradle concept, place it in the sustainability discourse and be able to apply it. • critically discuss the opportunities and limitations oft he cradle to cradle concept • be able to discuss the tasks, goals, and basic concepts in the field of innovation management • be able to develop innovation strategies and policies based on a corporate sustainabilty strategy and discuss them in a critical way, taking into account the structural characteristics of SMEs • be able to define the processes related to innovation • be able to classify and evaluate technology management as part of innovation management • understand and take into account the legal aspects of innovation management, especially patent and competition law, as a framework and design factor • be able to describe and create a cycle of planning, implementation, and control of innovation
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6

Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory, optional, etc.)	Elective module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major.
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement points	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, seminar, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • McDonough, W./Braungart, M.: Cradle to Cradle: Remaking the way we make things. New York • Tonelli, M./Cristoni N.: Strategic management and the circular economy. New York • Kaschny, M. / Nolden, M. / Schreuder, S.: Innovationsmanagement im Mittelstand. Strategien, Implementierung, Praxisbeispiele, Wiesbaden Recommended additional reading (current edition in each case): • Hauschildt, J. / Salomo, S. / Schulz, C. / Kock, A. Innovationsmanagement, München

Module No./Code	BWM 22
Module name	Sustainable Entrepreneurship
If necessary, courses as part of module	BWM 21.1 Basics of sustaniable entrepreneurship BWM 21.1 Start-up and succession of sustainable business
Module's scope	Basics of sustaniable entrepreneurship • Basic concepts, tasks, and goals of sustainable entrepreneurship • The relationship between ethics and economy • Corporate Social Responsibility and sustainable development • Circular Economy and sustainable business models • Social Entrepreneurship • Female (sustainable) entrepreneurship Start-up and succession of sustainable business • Entrepreneurs, opportunities, and risks related to entrepreneurship, resources, organization, and environment as basic elements of entrepreneurship • The process of establishing a business • Special features of company succession for SMEs • Business plan as an instrument helpful in structuring the establishment and succession of a company
Learning outcomes	Students should: • be able to describe the basic concepts, tasks, and goals of entrepreneurship • be able to discuss and evaluate the relationship between ethics and economy • be able to recognize and critically discuss corporate responsibility and sustainability as a desirable orientation for entrepreneurship • be able to explain an to discuss different motivations behind sustainable entrepreneurial activity and business models, supporting sustainable entrepreneurship • be able to apply and critically discuss corporate responsibility instruments, such as CSR and Corporate Governance • be able to discuss issues such as: entrepreneurs, opportunities, and risks related to entrepreneurship, resources, organization, and environment as basic elements of entrepreneurship • be able to describe and evaluate the process of establishing a business • be able to demonstrate and apply the characteristics of business succession for SMEs • be able to apply and evaluate business plan as a structuring instrument of business start-up and succession
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ

Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory, optional, etc.)	Elective module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major.
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement points	Presentation and oral exam
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, seminar, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Fueglistaller, U. / Müller C./ Müller S./ Volery T: Entrepreneurship. Modelle, Umsetzung, Perspektiven. Mit Fallbeispielen. Wiesbaden • Göbel, E.: Unternehmensethik. Grundlagen und praktische Umsetzung, Stuttgart Recommended additional reading (current edition in each case): • Navatz, F.: Environment, Climate Change and Green Entrepreneurship. A Journey Towards Sustainable Development. New York

Module No./Code	BWM 23
Module name	Business English (intensification)
If necessary, courses as part of module	BWM 23.1 Business English (intensification)
Module's scope	• Making Decisions • People Skills: Stress • Management Scenario: Pitch and persuade • Emailing • Making an Impact • Out and About • People Skills: Delegation • Management Scenario: Change champion • Teleconferencing • Negotiating Deals • People Skills: Mediation
Learning outcomes	Students should: • be able to make decisions in difficult situations during discussions • be able to analyze the attitude towards stress in the workplace • be able to choose effective pitching techniques • be able to create and evaluate business e-mails, create appropriate e-mails • be able to create and analyze the appropriate start of a presentation; follow the basic rhetorical principles • be able to prepare information for delegation purposes in management • be able to make telephone conversations and video conferences, summarize conversations, and deal with critical situations • be able to plan and lead negotiations • know and be able to analyze the basics of mediation
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (64 full-time course / 86 self-study)
Module type (obligatory, optional, etc.)	Elective module
Module's applicability	As an interdisciplinary module, it serves the acquisition of soft skills and helps in understanding English specialist texts during the course.
Requirements for participation	Participation in interdisciplinary module BWÜ 2
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.

Course language	English
Exam type / requirements for awarding academic achievement points	Written exam (90 min) and oral exam (20 min)
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Powell, M./Allison, J.: In Company 3.0 – Upper Intermedi-ate Student's Book Pack (B2+). Macmillan Publishing. London Recommended additional reading (current edition in each case): • Schofield, J.: Double Dealing. Intermediate Business Eng-lish Course. Summertown Publishing ltd. • Stock (Hrsg.): Business Spotlight. Englisch für den beruflichen Erfolg. Kwartalnik. München

Module No./Code	BWM 24
Module name	Introduction to business computing
If necessary, courses as part of module	BWM 24.1: Basics of business computing BWM 23.2: Digitization of business processes
Module's scope	Basics of business computing • Tasks, goals, and basic concepts related to business computing • Relationship between information technology and organization • Modeling methods • Basics of software development • Operating application systems Digitization of business processes • Communication technology and network infrastructures • Digitization and networking of products
Learning outcomes	Students should: • be able to describe the tasks, goals, and basic concepts related to business computing • be able to explain and discuss the relationship between an organization and information technology • be able to present, select, and apply modeling methods • be able to describe and evaluate the basics, activities, and process models of software development • be able to structure and explain operational application systems • be able to present communication technology and network infrastructures as a condition for digitization • be able to recognize and critically discuss the opportunities and threats related to digitization and networking of products • be able to present and assess the advantages and disadvantages of process digitization using ERP systems • be able to compare and assess the possibilities and limitations of digitization of value chains and business models
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory, optional, etc.)	Elective module

Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major.
Requirements for participation	- none -
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N.
Course language	German
Exam type / requirements for awarding academic achievement	Portfolio with presentation
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading (latest edition in each case): • Scharzer, B. / Krcmar, H.: Wirtschaftsinformatik: Grundlagen betrieblicher Informationssysteme. Stuttgart • Barton, T. / Müller, C. / Seel, C. (Hrsg.): Digitalisierung in Unternehmen. Von den theoretischen Ansätzen zur praktischen Umsetzung. Wiesbaden Recommended additional reading (current edition in each case): • Weber, P. / Gabriel, R. / Lux, T. / Menke K: Basics in Business Informatics. Stuttgart

5.4 Practice-integrating Study Modules

Module No./Code	BPR 26
Module name	Reflections on practice 1
If necessary, courses as part of module	
Module's scope	Module Reflections on Practice 1 combines business economics with business/professional tasks and guides students towards scientific analysis of their professional activity. As part of their reflections on practice, students should primarily be able to use the methodological knowledge acquired in the business modules listed below to solve problems of low complexity as found in operational practice. • BWM 5 Basics of general economics • BWM 6 Basics of environmental economics • BWM 7 Basics of business administration • BWM 8 Basics of human resource management in SMEs • BWM 9 Sustainable Marketing
Learning outcomes	Students should: • be able to present findings from operational practice • be able to combine it with the basic methods, procedures, and management instruments originating from a module of choice (BWM 5 to BWM 9)
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125 (4 full-time course / 121 self-study)
Module type (obligatory, optional, etc.)	Practical module (obligatory)
Module's applicability	
Requirements for participation	Participation in all modules from BWM 5 to BWM 9
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N. (Supervisor of the Reflections on Practice module)
Course language	German
Exam type / requirements for awarding academic achievement	Portfolio with an expert discussion
Grade's contribution to the total grade	2.7 % (5/180)

Teaching and learning methods	guided self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading * (current edition in each case): • Balzert, H. / Schäfer, C. / Schröder, M. / Kern, U.: Wissenschaftliches Arbeiten. Ethik, Inhalt & Form wiss. Arbeiten, Handwerkszeug, Quellen, Projektmanagement, Präsentation. Berlin * and literature indicated in individual modules

Module No./Code	BPR 27
Module name	Reflections on practice 2
If necessary, courses as part of module	
Module's scope	Module Reflections on Practice 2 combines business economics with business/professional tasks and guides students towards scientific analysis of their professional activity. As part of their reflection on practice, students should primarily focus on the methodological knowledge acquired in the following business modules related to basic issues of low to medium complexity resulting from business practice. • BWM 10 External accounting • BWM 11 Sustainable financing and Investments in SMEs • BWM 12 Materials management • BWM 13 Basics of commercial and environmental law • BWM 14 Internal accounting and basics of business taxation • In addition, it is possible to choose topics from the modules of the first academic year (BWM 5 - BWM 9).
Learning outcomes	Students should: • be able to obtain information on practical activities in a company as well as process and document it, • be able to combine it with thebasic management methods, procedures, and instruments from a module of choice (BWM 5 to BWM 14) • be able to present key results
Academic Year (SJ)	2. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (4 full-time course / 171 self-study)
Module type (obligatory, optional, etc.)	Practical module (obligatory)
Module's applicability	
Requirements for participation	Participation in all modules from BWM 5 to BWM 14
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N. (Supervisor of the Reflections on Practice module)
Course language	German
Exam type / requirements for awarding academic achievement	Portfolio with presentation and an expert discussion

Grade's contribution to the total grade	3.8 % (7/180)
Teaching and learning methods	guided self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading * (current edition in each case): • Klein, A.: Wissenschaftliches Arbeiten im Dualen Studium. Stuttgart * and literature indicated in individual modules Recommended additional reading (current edition in each case): • Balzert, H. / Schäfer, C. / Schröder, M. / Kern, U.: Wissenschaftliches Arbeiten. Ethik, Inhalt & Form wiss. Arbeiten, Handwerkszeug, Quellen, Projektmanagement, Präsenta-

Module No./Code	BPR 28
Module name	Reflections on practice 3
If necessary, courses as part of module	
Module's scope	Module Reflections on Practice 3 combines business economics with business/professional tasks and guides students towards deep scientific analysis of their professional activity. As part of their reflection on practice, students should primarily focus on the methodological knowledge acquired so far and as part of the following business modules related to the basic issues of medium complexity resulting from business practice. • BWM 15 Materials management • BWM 16 Organization and change management • BWM 17 Sustainable Supply Chain Management
Learning outcomes	Students should: • be able to identify economic problems and tasks of medium complexity • be able to analyze states, processes, or situations based on previously acquired knowledge in the field of business management • be able to take into account test results • identify states, processes, or situations related to operational activities based on methods and principles • be able to reasonably propose project solutions or suggestions
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	8
Total hours	200 (4 full-time course / 196 self-study)
Module type (obligatory, optional, etc.)	Practical module (obligatory)
Module's applicability	
Requirements for participation	Participation in all modules from BWM 5 to BWM 22
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N. (Supervisor of the Reflections on Practice module)
Course language	German
Exam type / requirements for awarding academic achievement	Reflections on practice
Grade's contribution to the total grade	4.4 % (8/180)

Teaching and learning methods	guided self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading * (current edition in each case): • Klein, A.: Wissenschaftliches Arbeiten im Dualen Studium. Stuttgart • Balzert, H. / Schäfer, C. / Schröder, M. / Kern, U.: Wissenschaftliches Arbeiten. Ethik, Inhalt & Form wiss. Arbeiten, Handwerkszeug, Quellen, Projektmanagement, Präsentation. Berlin • Eisend, M./Kuß, A.: Grundlagen empirischer Forschung. Zur Methodologie in der Betriebswirtschaftslehre. Wiesbaden * and literature indicated in individual modules Recommended additional reading (current edition in each case): • Kornmeier, M.: Wissenschaftstheorie und Wissenschaftliches Arbeiten: Eine Einführung für Wirtschaftswissenschaftler. Heidelberg • Atteslander, P.: Methoden der empirischen Sozialforschung. Berlin • Schnell, R./Hill, P. B./Esser, E.: Methoden der empirischen Sozialforschung. München • Flick, U./von Kardorff, E./Steinke, I. (Hrsg.): Qualitative Forschung. Reinbek

Module No./Code	BPR 29
Module name	Capstone project
If necessary, Courses as part of module	
Module's scope	The Capstone project includes a complex operational, practical problem, which is approached in an application-oriented and multidisciplinary manner, as far as possible, on the basis of the contents and competences acquired during the course. The work is carried out in groups (teams) of students with 4 to 5 participants. In terms of content, the students participating in the Capstone project should work on the knowledge acquired in all business modules from the first three years of study that have been completed so far, which is highly complex in relation to operational problems.
Learning outcomes	Students should: • be able to identify economic problems and tasks of high complexity • be able to analyze structures in complex practical problems • be able to select and justify relevant theories, models, methods, or tools for solving problems • be able to create and evaluate solutions to problems based on theoretical foundations • be able to reflect on the experience gained from teamwork processes • be able to discuss their own solutions to problems, including issues such as practical relevance, ethical
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (32 full-time course / 143 self-study)
Module type (obligatory, optional, etc.)	Practical module (obligatory)
Module's applicability	
Requirements for participation	Participation in all modules from BWM 5 to BWM 22
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N. (Supervisor of the Reflections on Practice module)
Course language	German
Exam type / requirements for awarding academic achievement	Portfolio with presentation and an expert discussion

Grade's contribution to the total grade	3.8 % (7/180)
Teaching and learning methods	guided self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading * (current edition in each case): • Klein, A.: Wissenschaftliches Arbeiten im Dualen Studium. Stuttgart • Balzert, H. / Schäfer, C. / Schröder, M. / Kern, U.: Wissenschaftliches Arbeiten. Ethik, Inhalt & Form wiss. Arbeiten, Handwerkszeug, Quellen, Projektmanagement, Präsentation. Berlin • Eisend, M./Kuß, A.: Grundlagen empirischer Forschung. Zur Methodologie in der Betriebswirtschaftslehre. Wiesbaden * and literature indicated in individual modules Recommended additional reading (current edition in each case): • Kornmeier, M.: Wissenschaftstheorie und Wissenschaftliches Arbeiten: Eine Einführung für Wirtschaftswissenschaftler. Heidelberg • Atteslander, P.: Methoden der empirischen Sozialforschung. Berlin • Schnell, R./Hill, P. B./Esser, E.: Methoden der empirischen Sozialforschung. München • Flick, U./von Kardorff, E./Steinke, I. (Hrsg.): Qualitative Forschung: ein Handbuch.Reinbek

Module No./Code	BPR 30
Module name	Reflections on practice 4
If necessary, courses as part of module	
Module's scope	Module Reflections on practice 4 is aimed at intensive preparation for writing a BA thesis. In the fourth (last) year of study, students should be able individually work on more complex business problems, in a manner similar to the previous Reflections on practice modules (BPR 1 - BPR 3). In addition to scientifically sound analysis of the available material and existing problems, the focus should also be on the application and, if necessary, the reasonable extension or continuation of the methods, procedures, and instruments used to solve or create tasks or issues of operational importance. As part of this module, it is also possible to use reflections that go beyond the module's scope, analyses, or evaluations in order to expand the diversity of perspectives for the purpose of task and problem processing. As part of this module, in terms of substance, students should use the knowledge acquired in all business modules completed so far.
Learning outcomes	Students should: • be able to analyze and estimate demanding tasks and operational problems based on sound scientific foundations and use innovative solutions as an extension or continuation of the applied methods, procedures, and instruments • be able to critically reflect on issues related to the assumptions of the module or go beyond it to carry out analyzes or assessments to increase the diversity of perspectives
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	8
Total hours	200 (4 full-time course / 196 self-study)
Module type (obligatory, optional, etc.)	Practical module (obligatory)
Module's applicability	
Requirements for participation	Participation in all modules from BWM 5 to BWM 24
Person responsible for the module	Prof. Dr. Joachim von Kiedrowski
Name(s) of the teacher(s)	currently no information available (Supervisor of the Reflections on Practice module)

Course language	German
Exam type / requirements for awarding academic achievement	Reflections on practice
Grade's contribution to the total grade	4.4 % (8/180)
Teaching and learning methods	Self-study with care
Special information (e.g. online classes, excursions into practice)	- none -
Literature	Obligatory reading * (current edition in each case): • Klein, A.: Wissenschaftliches Arbeiten im Dualen Studium. Stuttgart • Balzert, H. / Schäfer, C. / Schröder, M. / Kern, U.: Wissenschaftliches Arbeiten. Ethik, Inhalt & Form wiss. Arbeiten, Handwerkszeug, Quellen, Projektmanagement, Präsentation. Berlin • Eisend, M./Kuß, A.: Grundlagen empirischer Forschung. Zur Methodologie in der Betriebswirtschaftslehre. Wiesbaden * and literature indicated in individual modules Recommended additional reading (current edition in each case): • Kornmeier, M.: Wissenschaftstheorie und Wissenschaftliches Arbeiten: Eine Einführung für Wirtschaftswissenschaftler. Heidelberg • Atteslander, P.: Methoden der empirischen Sozialforschung. Berlin • Schnell, R./Hill, P. B./Esser, E.: Methoden der empirischen Sozialforschung. München • Flick, U./von Kardorff, E./Steinke, I. (Hrsg.): Qualitative Forschung: ein Handbuch. Reinbek

5.5 Bachelor's Thesis

Module No./Code	BWM 31
Module name	Bachelor's thesis
If necessary, courses as part of module	
Module's scope	
Learning outcomes	Students should (based on the knowledge acquired during studies) be able to register, analyze, and evaluate problematic, interdisciplinary, application-oriented problems using scientific methods, procedures, and instruments in an independent manner within the planned time, as well as develop solutions to problems and present in writing the procedure and results in accordance with scientific standards.
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	12
Total hours	300 (0 full-time course / 300 self-study)
Module type (obligatory,	Obligatory module
Module's applicability	
Requirements for participation	Meeting recruitment requirements in accordance with study and examination regulations
Person responsible for the module	N.N.
Name(s) of the teacher(s)	N.N. (Bachelor's thesis supervisor)
Course language	German
Exam type / requirements for awarding academic achievement	Bachelor's thesis
Grade's contribution to the total grade	6.6 % (12/180)
Teaching and learning methods	guided self-study
Special information (e.g. online classes, excursions into practice)	- none -
Literature	The supervisors provide students with specific guidelines on the selection and use of literature depending on the topic of the BA thesis.

Co-funded by the Erasmus+ Programme of the European Union

Result 5.1

Dual Bachelor's Degree Programs

Modul Manual "Management of Renewable Building Energy Technology"

Prepared by:

Berufsakademie Hamburg

Dual studies concept – short description
Management of Renewable Energy Technology in Buildings (Bachelor of Engineering)

Table of Contents

1 Needs of the economy and craft sector

Climate change and the ever-increasing demand for energy are the existential challenges of our global society. Effective climate protection by reducing CO2 emissions has become a major goal at all levels of regional, national, and international environmental and energy policies. Due to the high share of energy used worldwide for heating and air conditioning of buildings, increasing the energy efficiency of buildings is an important reference point for achieving climate protection goals. Combined with funding programs for building renovations that take into account energy efficiency and the use of renewable energy sources, these regulations create framework conditions which, in the long term, lead to increased demand for products and services in crafts and small and medium-sized enterprises, and thus to additional demand for qualified professionals and management staff focused on the renewable energy sector.

Craft and small and medium-sized enterprises operating in the field of building energy technology need employees with a wide range of qualifications and competences.

2 Goals of the MEG study program

In addition to technical and business knowledge, students should also acquire specialized and methodological competences as well as personal and communication skills, which are comprehensive professional competences. Thanks to these competences, they should provide firm support for their company or organization in offering future-oriented products and services that are competitive from a technical, ecological, and economic point of view. Studying the described course will enable them to prepare analyses and concepts of solutions to technical and business problems based on sound scientific knowledge as well as take responsibility for their entrepreneurial, social, and personal implementation.

The course focuses on the use of renewable energy and rational use of energy in private residential buildings as well as commercial and public facilities. Building systems are defined as technical and functional systems created with the intention of use and maintenance throughout their lifecycle, with consideration to the economic point of view.

Holistic approach is implemented from the perspective of the client advisor and planner or comparable professional areas and activities. The main points of consideration are specific necessary actions and functional knowledge as well as the use value of the technology. The emphasis is on scientific and practical process-oriented planning, commissioning, and use of installations, as well as the implementation of measures to increase energy efficiency.

In detail, the study course "Management of Renewable Building Energy Technology" provides the students with the following information:

- comprehensive understanding of technical, ecological, and economic challenges related to renewable energy and rational use of energy in buildings,
- ability to develop and market an offer that requires intensive advisory in terms of products and services in the field of “renewable energy technologies in buildings” in an interdisciplinary manner,
- technical and methodological competences enabling planning, implementation, and launching of interdisciplinary technical solutions for buildings,
- social and communication competences in order to exchange specialist knowledge with experts, professionally lead employees, and advise clients in an interdisciplinary manner,

- technical and methodological competence to participate in the strategic development of corporate policy,
- technical and methodological competence to participate in operational company management, and thus to perform economic and technical management tasks
- technical and methodological competences for designing operational efficiency processes as well as for the purpose of systematic recording and analyzing the obtained results and using them in continuous improvement processes.

Interdisciplinary aspects are implemented mainly in modules TÜ 1 – TÜ 5 (interdisciplinary modules). Business competences are implemented mainly in modules TM 1 – TM 8 (basic management modules). Technical competences are implemented in modules TK 1 – TK 9 (basic technical modules).

In addition, there are interdisciplinary modules focusing both on technical and interdisciplinary aspects: TS 1 – TS 4 (technical specialization modules), TMS 1 – TMS 3 (specialization modules related to management), TPR 1 – TPR 4 (reflections on practice with emphasis on technology or management), and a bachelor’s thesis.

Scientific and methodological competences of students are supported by the basic interdisciplinary module TÜ 1 (scientific work and research methodology). In addition, they are promoted and required in particular as part of the above-mentioned interdisciplinary modules focused on both technical and interdisciplinary aspects.

3 Content implementation

The “Management of renewable energy technologies for buildings” course consists of 33 compulsory and elective modules in total as well as a bachelor’s thesis. The modules are grouped as follows:

Module group	**number of CP to**
Basic management modules	40
Basic modules exceeding the scope of a single	25
Basic technical modules	60
Specialization modules related to management	5
Total CP (theoretical part)	*130*
Practical part	
- Technical specialization modules	12
- Reflections on practice	28
Total CP (practical part)	*40*
Bachelor’s thesis	10
Sum total	*180*

Basic modules

As part of the basic modules, students acquire broad competencies in the field of scientific and application requirements in management and technology (see: Basic modules related to management, no. TM 1 to TM 8, and basic technical modules, no. TK 1 to TK 9).

Basic modules, exceeding the competences of a single module

On the one hand, the basic interdisciplinary modules allow the acquisition of competences that contribute to the comprehensive understanding of practical solutions to problems. On the other, they present the general foundations of methodological scientific work for the systematization and solving of practical problems.

This also contributes to the preparation for the completion of master’s programs (see: Basic interdisciplinary modules TÜ 1 – TÜ 5) taking place after the completion of bachelor’s studies.

Specialization modules related to management (area of elective subjects)

In order to deepen their knowledge of business economics, students are required to participate in one of the three modules offered (TMS 1 – TMS 3), depending on their individual interests.

Share of the practical part

The practical parts consist of reflections on practice and technical specialization modules.

- **Reflections on practice**
  Taking into account the specific requirements of a given company, two reflections on practice should be prepared, focusing on management and technology, for a total of 28 CP points. The requirements to be met are listed in the preparation order of reflections on practice (see Attachment X: The order of regulation and creation of reflections on practice).

- **Technical specialization modules** (area of elective subjects):
  Students take classes in two out of the four modules offered (TS 1 – TS 4), depending on their individual interests. The area of elective subjects is a specialized supplement, deepening the competences acquired by students as part of the basic technical modules (TK 1 – TK 9). These modules focus on interdisciplinary analysis of practical problems related to energy technology in buildings as well as on planning and documentation of relevant solutions. The technical specialization modules (TS 1 – TS 4) described above are considered practical training components due to the nature of the project and the required interdisciplinary analysis of practical problems in building energy engineering as well as the planning and documentation of relevant solutions included in the dual program.

4 Degree designation Bachelor of Engineering

After completing the course, a Bachelor of Engineering diploma is awarded (abbreviated as B. Eng.) The economic engineering qualifications framework was used to help understand the structure of the course. The modules can be assigned to the main areas of the qualifications framework as follows.

Basic area	**Modules**[1]	**ECTS credits**
Engineering, natural sciences, mathematics (at least 55 ECTS credits)	TK 1 – TK 9	60
Economics, law, and social sciences (at least 45 ECTS credits)	TM 1 – TM 8, TMS 1 – TMS 3	45
Integration subjects (at least 25 ECTS credits)	TÜ 2, TÜ 4, TS 1 – TS 4, TK 4	29
Soft skills and foreign languages (at least 10 ECTS	TÜ 1, TÜ 3, TÜ 5	15
Apprenticeships (at least 15 ECTS credits)	TPR 1 – TPR 4	28
Thesis (at least 10 ECTS credits)	Bachelor’s thesis	10

[1] Due to the interdisciplinary nature of the basic technical modules, technical specialization modules, and reflections on practice, clear assignment of modules is not always possible. The example of module TK 4 shows the possibility of assigning it to both engineering and integration subjects.

As can be seen from the above module assignment to the main areas of the qualification’s framework in industrial engineering, the minimum scope of the basic areas is met. As a result, awarding a new graduation designation, i.e. B.Eng., is justified.

5 Didactic concept

In order to enable graduates to meet their current and future challenges in the field of energy technology in buildings, a broad spectrum of well-established scientific and practical competences is needed.

The concept of dual studies is a didactic approach to the transfer of knowledge and its application as part of studies at the Berufsakademie and vocational training in the workplace based on the above fundamentals.

Classes take place on average over three weekends per month (apart from periods free from classes). In addition, in the spring and autumn of the academic year, a full-time 14-day block takes place at the vocational academy. In between individual classes students participate in company apprenticeships. This form of organization allows students

- to use the knowledge from their classes in practice, prepare for the classes,
- and draw conclusions from them as part of self-study.

In order to guarantee an intensive acquisition of competences, the courses are largely conducted in small groups of approx. 30 students. Even “lecture” classes for larger groups are usually based on interactive discussion. Classes in smaller groups utilize collaborative methods facilitating participation, such as pair work, group work, and case studies. As part of pair work and group work, students are encouraged to bring in experiences related to their apprenticeships in the workplace, and thus to combine theory and practice with the help of a lecturer.

The relationship between the apprenticeships and learning is largely ensured and guided by reflections on practice. Reflections on practice are written studies that are prepared as part of workplace learning and are part of the vocational academy’s course. Reflections on practice are project works, aimed at discussing specific issues of operational practice, using specialized and methodological scientific competences acquired as part of the course. While preparing their reflections on practice, students are accompanied by a lecturer from the vocational academy.

One of the areas of the didactic concept are seminar classes. Small groups of students facilitate intensive dialogue with lecturers as part of discussions focused on the content related to the students’ professional practice. Exercises, also carried out as group work, enable the application and exploration of the didactic plan. Moreover, case studies and related exercises are used to convey complex educational content and learn holistic thinking in individual modules.

Practical projects

Project modules

Area of elective subjects Technology

- TS 1 Practical project Photovoltaic installations
- TS 2 Practical project Solar thermal installations
- TS 3 Practical project Building systems technology
- TS 4 Practical project Multifunctional production processes

These classes are part of the didactic plan and constitute independent practice-oriented projects with complex tasks, case studies, and simulations.

Reflections on practice

The study plan also includes the preparation of four reflections on practice, 7 ECTS credits each (one for each academic year 1-4). As part of their reflections on practice, students should plan and conduct research as part of a practical project and analyze its results. Students create a report on the implementation of the task, which is scored as the so-called list of educational achievements. The modules on the basis of which students prepare reflections on practice are selected by the students in consultation with the company in which their apprenticeship takes place.

Reflections on practice are used to develop transfer and problem-solving competences by applying theory in the workplace and to promote students’ social and communication competences through close coordination and cooperation with supervisors and employees, as well as clients in the company.

Unlike the practical projects, a large part of the content/topics from the classes offered up to the exam is available for choosing individual work-related problems. Reflections on practice take place in the practical workplace and provide complementary self-study.

Curriculum Overview:
Management of renewable energy technology in buildings
(B.Eng) 4 academic years or 8 semesters

Module No.	Module	Credit Points during the				Total hours			Type of class	Examination performance of the module (duration in min) as well as	Contribution to the total grade
		1.	2.	3.	4.	Hours Full-time study	Hours Self-study	Hours in total	Lecture (V), practical classes (Ü),	Exam type	Total grade
Management-related core modules											
TM 1	**Introduction to Business Operations and general economics**	**5**				**64**	**61**	**125**			**5 / 180**
TM 1.1	Basics of enterprise management					16	16		V/Ü	Written exam (120 min)	
TM 1.2	Basics of business law					16	16		V/Ü		
TM 1.3	Basics of Environmental protection law					12	12		V/Ü		
TM 1.4	Basics of national economy					20	17		V/Ü		
TM 2	**Management of strategic processes**	**5**				**60**	**65**	**125**			**5 / 180**
TM 2.1	Introduction to management					16	17		V/Ü	Written exam (120 min)	
TM 2.2	Strategic management and planning					28	32		V/Ü		
TM 2.3	Business ethics and corporate culture					16	16		V/Ü		
TM 3	**Investment and financing**		**5**			**70**	**55**	**125**			**5 / 180**
TM 3.1	Investments					24	20		V/Ü	Written exam (120 min)	
TM 3.2	Financing					46	35		V/Ü		
TM 4	**Marketing**		**5**			**64**	**61**	**125**			**5 / 180**
TM 4.1	Basics of marketing and marketing research instruments					24	21		V/Ü	Written exam (120 min)	
TM 4.2	Product, price and distribution policies					20	20		V/Ü		
TM 4.3	Establishing communication with the client					20	20		V/Ü		
TM 5	**Human resources management**			**5**		**60**	**65**	**125**			**5 / 180**
TM 5.1	Basics of human resources management					40	45		V/Ü	Written exam (120 min)	
TM 5.2	Basics of human resources leadership					20	20		V/Ü		
TM 6	**Business law and labor law**				**5**	**60**	**65**	**125**			**5 / 180**
TM 6.1	Business law					26	25		V/Ü	Written exam (120 min)	
TM 6.2	Labor law and social insurance law					34	40		V/Ü		
TM 7	**Cost and result account**				**5**	**60**	**65**	**125**			**5 / 180**
TM 7.1	Cost and result account					60	65		V/Ü	Written exam (120 min)	
TM 8	**Process management and organizational development**				**5**	**60**	**65**	**125**			**5 / 180**
TM 8.1	Basics of process structure and organization					24	25		V/Ü	Written exam (120 min)	
TM 8.2	Process management					18	20		V/Ü		
TM 8.3	Organizational development					18	20		V/Ü		

Curriculum Overview:
Management of renewable energy technology in buildings
(B.Eng) 4 academic years or 8 semesters

Module No.	Module	Credit Points during the				Total hours			Type of class	Examination performance of the module (duration in min) as well as	Contribution to the total grade
		1.	2.	3.	4.	Total grade	Hours Self-study	Hours in total	Lecture (V), practical classes (Ü),	Exam type	Total grade
Interdisciplinary modules											
TÜ 1	**Scientific work and research methodology**	**5**				**60**	**65**	**125**			**5 / 180**
TÜ 1.1	Scientific work					24	25		V/Ü/S	Written exam (120 min)	
TÜ 1.2	Basics of research methodology					36	40		V/Ü/S		
TÜ 2	**Basics of project management**		**5**			**60**	**65**	**125**			**5 / 180**
TÜ 2.1	Basics of project management					60	65		V/Ü	Written exam (120 min)	
TÜ 3	**Communication, consulting and presentation**		**5**			**60**	**65**	**125**			**5 / 180**
TÜ 3.1	Basics of communication and consulting					36	45		V/Ü	Documentation, presentation (15 min) with an expert discussion (15 min)	
TÜ 3.2	Presentation					24	20		V/Ü		
TÜ 4	**Interdisciplinary project management at construction companies**		**5**			**60**	**65**	**125**			**5 / 180**
TÜ 4.1	Interdisciplinary project management at construction companies					60	65		V/Ü	Written exam (120 min)	
TÜ 5	**English for Special Purposes**		**5**			**48**	**77**	**125**			**5 / 180**
TÜ 5.1	Basics of English for engineering					48	77		V/Ü	Written exam (90 min) and oral exam (20 min)	
Technical core modules											
TK 1	**Basics of technical building systems I**	**8**				**90**	**110**	**200**			**8 / 180**
TK 1.1	Mathematical basics I					16	25		V/Ü	Written exam (120 min)	
TK 1.2	Electrical engineering					50	40		V/Ü		
TK 1.3	Measuring technology					24	45		V/Ü		
TK 2	**Basics of technical building systems II**	**8**				**90**	**110**	**200**			**8 / 180**
TK 2.1	Mathematical basics II					16	25		V/Ü	Written exam (120 min)	
TK 2.2	Thermodynamics and heat exchange					54	40		V/Ü		
TK 2.3	Calculating the heating load					20	45		V/Ü		
TK 3	**Basics of technical building systems III**		**8**			**90**	**110**	**200**			**8 / 180**
TK 3.1	Mathematical basics III					16	25		V/Ü	Written exam (120 min)	
TK 3.2	Building construction and building physics					54	40		V/Ü		
TK 3.3	Chemicals and building materials					20	45		V/Ü		
TK 4	**Renewable energy sources and systems**	**7**				**78**	**97**	**175**			**7 / 180**
TK 4.1	Energy policy and energy law					12	16		V/Ü	Written exam (120 min)	
TK 4.2	Renewable energy sources and systems					66	81		V/Ü		

Curriculum Overview:
Management of renewable energy technology in buildings
(B.Eng) 4 academic years or 8 semesters

Module No.	Module	Credit Points during the				Total hours			Type of class	Examination performance of the module (duration in min) as well as	Contribution to the total grade
		1.	2.	3.	4.	Total grade	Hours Self-study	Hours in total	Lecture (V), practical classes (Ü),	Exam type	Total grade
TK 5	**Building systems as technical and functional systems I**			**5**		**64**	**61**	**125**			**5 / 180**
TK 5.1	Information technology					52	50		V/Ü	Written exam (120 min)	
TK 5.2	Lighting technology					12	11		V/Ü		
TK 6	**Building systems as technical and functional systems II**			**5**		**64**	**61**	**125**			**5 / 180**
TK 6.1	Industrial installation technology					28	25		V/Ü	Written exam (120 min)	
TK 6.2	Installation planning					36	36		V/Ü		
TK 7	**Energy efficiency and thermal insulation in buildings**			**6**		**66**	**84**	**150**			**6 / 180**
TK 7.1	Basics of energy efficiency and thermal protection in buildings					50	64		V/Ü	Written exam (120 min)	
TK 7.2	Economic efficiency of renovation works carried out in buildings					16	20		V/Ü		
TK 8	**Processing, distribution and automation of energy**			**6**		**66**	**84**	**150**			**6 / 180**
TK 8.1	Energy conversion and distribution					50	44		V/Ü	Written exam (120 min)	
TK 8.2	Energy use					16	40		V/Ü		
TK 9	**Measurement, monitoring, regulation and automation in building system technology**				**7**	**78**	**97**	**175**			**7 / 180**
TK 9.1	Technology of measurement and control in building systems					38	45		V/Ü	Written exam (120 min)	
TK 9.2	Building automation					40	52		V/Ü		
Technical specialization modules (elective modules' area)*											
TS 1	**Project: Photovoltaic installation (PV)**			**6**		**60**	**90**	**150**			**6 / 180**
TS 1.1	Photovoltaic installation					60	90		V/Ü	Documentation, presentation (15 min) with an expert discussion	
TS 2	**Project: Solar-thermal installation**			**6**		**60**	**90**	**150**			**6 / 180**
TS 2.1	Solar-thermal installation					60	90		V/Ü	Documentation, presentation (15 min) with an expert discussion	
TS 3	**Project: Building system technology**				**6**	**60**	**90**	**150**			**6 / 180**
TS 3.1	Building system technology					60	90		V/Ü	Documentation, presentation (15 min) with an expert discussion	
TS 4	**Project: Multifunctional production processes**				**6**	**60**	**90**	**150**			**6 / 180**
TS 4.1	Multifunctional production processes					60	90		V/Ü	Documentation, presentation (15 min) with an expert discussion	

*One of the offered modules no. TS1 and TS2 in the third and one of the offered modules TS3 and TS4 in the fourth academic year to be selected.

Curriculum Overview:
Management of renewable energy technology in buildings
(B.Eng) 4 academic years or 8 semesters

Module No.	Module	Credit Points during the				Total hours			Type of class	Examination performance of the module (duration in min) as well as	Contribution to the total grade
		1.	2.	3.	4.	Total grade	Hours Self-study	Hours in total	Lecture (V), practical classes (Ü),	Exam type	Total grade
Management-related specialization modules (elective modules' area)**											
TMS 1	**Business plan**			**5**		**48**	**77**	**125**			**5 / 180**
TMS 1.1	Business plan					48	77		Ü	Presentation (15 min) with an expert discussion	
TMS 2	**Simulations**			**5**		**48**	**77**	**125**			**5 / 180**
TMS 2.1	Simulations					48	77		Ü	Presentation (15 min) with an expert discussion	
TMS 3	**Staff development and trainers' qualifications**			**5**		**76**	**49**	**125**			**5 / 180**
TMS 3.1	Staff development					16	12		V	Written exam (180 min), practical examination	
TMS 3.2	Qualifications of trainers in SMEs					60	37		V/Ü		
**One of the offered modules TMS 1, TMS 2 or TMS 3 to be selected.											
Reflections on practice***											
TPR 1	**Reflections on practice 1 with focus on technology or management**	**7**				**0**	**175**	**175**		Reflections on practice (processing time 8 weeks)	**7 / 180**
TPR 2	**Reflections on practice 2 with focus on technology or management**		**7**			**0**	**175**	**175**		Reflections on practice (processing time 8 weeks)	**7 / 180**
TPR 3	**Reflections on practice 3 with focus on technology or management**			**7**		**0**	**175**	**175**		Reflections on practice (processing time 8 weeks)	**7 / 180**
TPR 4	**Reflections on practice 4 with focus on technology or management**				**7**	**0**	**175**	**175**		Reflections on practice (processing time 8 weeks)	**7 / 180**
*** Two Reflections on practice modules each with a focus on engineering and two Reflections on practice modules with a focus on management to be drawn up.											

BA	**Bachelor's thesis**				**10**	**0**	**250**	**250**		**Processing time 9 weeks**	**10 / 180**

Total	**45**	**45**	**45**	**45**	**1668**	**2832**	**4500**		

BERUFSAKADEMIE HAMBURG

Module's handbook

Dual studies in the field of "Management of renewable energy technology in buildings" (Bachelor of Engineering / B. Eng.)

Table of Contents

A. Basic modules on management

Module No./Code	TM 1
Module name	**Introduction to Business Operations and general economics**
If necessary, classes as part of module	TM 1.1 Basics of enterprise management TM 1.2 Basics of Business Law TM 1.3 Basics of Environmental Protection Law TM 1.4 Basics of national economy
Module's scope	- Company structure, rules of economics, basic model of production process, business accounting basics, tasks and functions of internal and external accounting - Basics of civil code, contract law, property law, tortious acts - Environmental protection law (public environmental protection law), (private environmental protection law), criminal law, environmental law and law of administrative offences - Economic methods (review), economic systems, markets (market behavior, adjustment processes, market operation irregularities), enterprises (production, supply in case of market saturation, prices setting, market force effects, competition strategies), environmental economy, allocation issues, environmental instruments (e.g., fees, certificates,
Learning outcomes	Students should: - understand the management of enterprises within the subject of enterprise economy, - be able to describe their own enterprise based on the basic model of a production process, - be able to explain basic rules and structures of the German legal system, - be able to explain how legal transaction are made and what are the reasons they are challenged, - be able to analyze and assess regularity of legal transactions, - be able to differentiate and analyze various types of liability for tortious acts, - be able to explain basic rules and guidelines of the public environmental protection law and apply them in specific cases, - be able to describe the basics of environmental responsibility regulations, - be able to describe general guidelines of the criminal law and law of administrative offences, - be able to describe the role of enterprises, households and the state in national economy, - be able to analyze the importance and position of SMEs in national economy, - understand the principles of an economic cycle and be able to apply it in specific cases, - understand market forms, price setting mechanisms and be able to apply them in specific cases, - understand and be able to analyze how various market

	- be able to describe and analyze aspects of competitors' strategic actions, - be able to identify causes of market irregularities, - be able to identify and explain allocation problems in an economic system that are important from the environmental standpoint,
Academic year (SJ)	1
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory, optional,	Obligatory module
Module's applicability	Basic module involving management topics, which belongs to the group of modules regarding economics, law and social studies, and provides basis for the following modules: TM 2 - TM 8, TK 1 - TK 9, TS 1 - TS 4, TMS 1 - TMS 3 and TPR 1 - TPR 4 In terms of form and duration this module corresponds to the BM 5 module in the Enterprise management in the
Requirements for participation	- none -
Person responsible for the module	Prof. Dr. J. von Kiedrowski
Name(s) of the teacher(s)	Prof. Dr. J. von Kiedrowski, Dr. I. Drachenberg, Dr. J. Langosch
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Vahs, D. / Schäfer-Kunz, J.: Einführung in die Betriebswirtschaftslehre, 7. Aufl., Stuttgart 2015 - Brox, H./Rüthers, B./Henssler, M.: Allgemeiner Teil des BGB, 34., neu bearb. Aufl., München 2010 - Schwartmann, R.: Umweltrecht. Heidelberg u. a. 2006 - Siebert, H.: Einführung in die Volkswirtschaftslehre. 15., vollst. überarb. Aufl., Stuttgart 2007 - Wiesemeth, H.: Umweltökonomie: Theorie und Praxis im Gleichgewicht. Berlin, Heidelberg, New York u. a. 2003 Recommended additional literature - Boehme-Neßler, V./Schmidt-Rögnitz, A. (Hrsg.): Wirtschaftsrecht - Basisbuch für Studium und Praxis. 2. völlig überarb. u. erw. Aufl., München, Wien 2005 - Mankiw, N. G.: Grundzüge der Volkswirtschaftslehre. 4., überarb. und erw. Aufl., Stuttgart 2008

Module No./Code	TM 2
Module name	**Management of strategic processes**
If necessary, classes as part of module	TM 2.1 Introduction to management TM 2.2 Strategic management and planning TM 2.3 Business ethics and corporate culture
Module's scope	- Management basics, management cycle, planning basics, planning and analysis methods - Basics of strategic management, approaches and instruments of external analysis in strategic planning, internal analysis, value-oriented approach, strategy implementation, developing strategy in SMEs - Ethical basis of corporate governance, company's mission, cultural transformation in SMEs
Learning outcomes	Students should: - be able to view management as a complex process of planning, monitoring and controlling, - be able to identify and analyze success factors of sustainable development, - understand enterprise development as a process aimed at realizing the company's vision and mission, including its values and standards, - be able to explain types of strategies, - be able to explain methods of strategy analysis and development and apply them within SMEs framework, - be able to explain and apply planning goals and methods at the company level, - be able to identify and analyze planning deficits in small and medium enterprises, - be able to describe and explain ethical basics of corporate governance, - be able to identify and interpret basic features of corporate culture, - be able to identify and point out the relations between ethics and corporate culture, - present actions aimed at adjusting corporate culture and be able to apply them in SMEs.
Academic year (SJ)	1
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125

Module type (obligatory,	Obligatory module
Module's applicability	Basic module involving management topics, which belongs to the group of modules regarding economics, law and social studies, and provides basis for the following modules: TM 3, TM 4, TM 5, TM 8, TMS 1 - TMS 3 and TPR 1 - TPR 4 In terms of form and duration this module corresponds to the BM 6 module in the Enterprise management in the SMEs sector course
Requirements for participation	- none -
Person responsible for the module	Prof. Dr. J. Richard
Name(s) of the teacher(s)	Prof. Dr. J. Richard
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Staehle, W. H.: Management. Eine verhaltenswissenschaftliche Perspektive. 8. Aufl., München 1999 - Hungenberg, H.: Strategisches Management in Unternehmen: Ziele - Prozesse - Verfahren. 36., überarb. Aufl., Wiesbaden 2011 - Küpper, H.-U.: Unternehmensethik. Hintergründe, Konzepte und Anwendungsbereiche. Stuttgart 2006 Zalecana literatura dodatkowa - Ehrmann, T.: Strategische Planung. Methoden und Praxisanwendungen. Berlin 2006 - Porter, M. E.: Wettbewerbsstrategie: Methoden zur Analyse von Branchen und Konkurrenten. 10. Aufl., Frankfurt/Main 1999 - Deal, T. E. / Kennedy, A. A.: Corporate Cultures: The Rites and Rituals of Corporate Life. Cambridge 2000

Module No./Code	TM 3
Module name	**Investment and financing**
If necessary, classes as part of module	TM 3.1 Investment TM 3.2 Financing
Module's scope	- definitions and kinds of investments, investment decision, key matters regarding investment planning, investment calculation procedure, - establishing economic efficiency in building technology, - Basics of financing, payment transactions, financial planning, principles of financing and capital structure, types of financing in a nutshell, financing with owner's equity, external financing, internal financing
Learning outcomes	Students should: - explain the significance of investment needs, - be able to apply the investment account as a tool to solve decision-making problems and be able to evaluate its results, - be able to specify and analyze economic life and an optimum replacement date, - be able to apply and critically evaluate static and dynamic procedures related to the investment account, - be able to point to basic instruments of enterprise financing and the relations between them, - be able to draw up financial plans with various timeframes and specify the ensuing requirements regarding financial liquidity or equity, - be able to apply the principles and key financial data in order to manage finances, - be able to identify and apply basic financing options, - be able to evaluate financing possibilities in relation to the aim of financing and acquiring equity for SMEs.
Academic year (SJ)	2
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Obligatory module

Module's applicability	Basic module involving management topics, which belongs to the group of modules regarding economics, law and social studies, and provides basis for the following modules: TM 4, TM 5, TM 7, TK 7, TS 1 - TS 4 and TPR 2 -TPR 4 In terms of form and duration this module corresponds to the BM classes 9.1 and 9.2 classes of the BM 9 module in the Business Administration in SMEs course
Requirements for participation	- none -
Person responsible for the module	Prof. Dr. J. Richard
Name(s) of the teacher(s)	Prof. Dr. J. Richard, currently no information available
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Kruschwitz, L.: Finanzierung und Investition. 6., überarb. und verb. Aufl., München 2010 - Zantow, R.: Finanzierung. Die Grundlagen modernen Finanzmanagements. 2., aktualisierte Aufl., München 2007 Recommended additional reading - Schneider, P.: Investition in die richtige Gebäudetechnik: Ein wirtschaftlicher Vergleich. Hamburg 2014 - Kruschwitz, L.: Investitionsrechnung. 12., aktualisierte Aufl., München 2009 - Perridon, L. / Steiner, M.: Finanzwirtschaft der Unternehmung. 15., überarb. und erw. Aufl., München 2009

Module No./Code	TM 4
Module name	**Marketing**
If necessary, classes as part of module	TM 4.1 Basics of marketing and marketing research instruments TM 4.2 Product, price and distribution policies TM 4.3 Establishing communication with the client
Module's scope	- Objectives and targets of marketing, marketing concept (process, instruments, marketing composition), concepts and objectives of marketing research, market research, analysis, observation, market forecast, basics of statistics, KPIs, motivation and opinion surveys (goal, procedures) - Basics of product policy, product management process, price setting, price strategies, specifics of price setting, distribution channels - Basics of communication with the client, planning, implementation and evaluation of discussions regarding sales and consulting, activities promoting sales
Learning outcomes	Students should: - understand goals, objectives and concepts of marketing as a tool for a sustainable delivery of products and services to the market, - be able to describe and explain key concepts connected with marketing research, - be able to identify and evaluate various options of market research, - be able to interpret and evaluate results of market research, - be able to apply selected basic principles of statistics to interpret market research results, - be able to specify and interpret key statistical data, - be able to formulate conclusions from market research results to boost marketing, - be able to describe the importance of a service offer oriented at the market for the enterprise's further activity, - understand and apply basic concepts and subjects of product policy, - be able to draw up product strategy on the basis of examples, - be able to describe options of price settings and apply them on the basis of general market conditions data, - be able to draw up price strategy, - be able to identify and evaluate alternative distribution channels, - be able to determine clients' knowledge and gaps at a consulting meeting, - be able to develop a positive approach to sales as a special form of consulting, - develop an individual view on the offered product or service

	and on the supplier-client relation, - be able to persuade clients during face-to-face meetings or phone conversations, - be able to present various forms of sales promotions and evaluate possibilities of applying them at SMEs.
Academic year (SJ)	2
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Obligatory module
Module's applicability	Basic module involving management topics, which belongs to the group of modules regarding economics, law and social studies, and provides basis for the following modules: TM 5, TMS 1, TMS 2, TPR 2 - TPR 4
Requirements for participation	- none -
Person responsible for the module	Prof. Dr. J. von Kiedrowski
Name(s) of the teacher(s)	S. Jamil; B. Gemmecke, currently no information available
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Kotler, P. / Armstrong, G. / Saunder, J.: Grundlagen des Marketing. 3. Aufl., München 2003 - Bleymüller, J. / Gehlert, G. / Gülicher, H.: Statistik für Wirtschaftswissenschaftler. 15., überarb. Aufl., München 2008 Recommended additional reading - Stiller, M.: Kundenberatung im persönlichen Verkauf. Wiesbaden 2006 - Loy, A.: Consultative Value Selling. Renningen 2006 - Schira, J.: Statistische Methoden der VWL und BWL. Theorie und Praxis. 3., aktualisierte Aufl., München 2011

Module No./Code	TM 5
Module name	**Human resources management**
If necessary, classes as part of module	TM 5.1 Basics of human resources management TM 5.2 Basics of human resources leadership
Module's scope	- Principles of human resources management, targets and objectives, planning of staff requirements, recruitment / marketing, selecting and hiring staff, creating jobs and salaries, staff controlling - Basics of human resources leadership, leadership concepts, employee interviews in the context of human resources management
Learning outcomes	Students should: - be able to describe basics of human resources management and evaluate their significance for SMEs, - be able to diversify staff planning methods and determine the company's human resources needs, - be able to describe and evaluate staff recruitment methods and apply them in case of issues connected with human resources in the SMEs sector, - understand methods of employee work schedule planning and be able to apply them in specific cases, - be able to explain the significance of various forms of remuneration and evaluate their application in various circumstances, - be able to describe basic principles of human resources management, - be able to identify, differentiate and apply concepts, techniques and leadership tools, - be able to prepare, carry out and evaluate staff interviews, - be able to use the theoretical approach to explain employee results and behaviour, - be able to analyze activities aimed at increasing staff motivation.
Academic year (SJ)	3
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Obligatory module

Module's applicability	Basic module involving management topics, which belongs to the group of modules regarding economics, law and social studies, and provides basis for the following modules: TM 6, TM 8, TMS 3 In terms of form and duration this module corresponds to the BM 10.1 class in module BM 10 in the Business Administration in SMEs course
Requirements for participation	- none -
Person responsible for the module	Prof. Dr. U. Schaumann
Name(s) of the teacher(s)	Prof. Dr. U. Schaumann
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during apprenticeship, guest lectures,	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Lindner-Lohmann, D./Lohmann, F./Schirmer, U.: Personal-management. Heidelberg 2008 - Jung, H.: Personalwirtschaft. 8., aktualisierte und überarbeitete Auflage, München 2008 - Berthel, J./Becker, F. G.: Personalmanagement. 8. Auflage, Stuttgart 2007 Recommended additional reading - Kolb, M.: Personalmanagement. Wiesbaden 2008 - Deutsche Gesellschaft für Personalführung (Hrsg.): Personalcontrolling für die Praxis: Konzepte – Kennzahlen – Unternehmensbeispiele. Bielefeld 2009 - Ryschka, J./Solga, M./Mattenklott, A. (Hrsg.): Praxishandbuch. Instrumente, Konzepte, Beispiele. 3. Auflage. Wiesbaden 2011 - Olfert, K.: Personalwirtschaft. 13., verbesserte und aktualisierte Auflage. Ludwigshafen 2008

Module No./Code	TM 6
Module name	**Business law and labor law**
If necessary, classes as part of module	TM 6.1 Business law TM 6.2 Labor law and social insurance law
Module's scope	- Regulations concerning contracts for specific work, general trading conditions, writ-of-payment proceedings, complaints procedure, enforcement proceedings, craft and business laws, trade law, companies law - Employment contract, employment protection, terminating employment relation, protection against dismissal, collective labor agreement, review of public insurances regulations - German Construction Contract Procedures (German: VOB)
Learning outcomes	Students should: - be able to describe basic regulations and structures of business law, - be able to describe and apply legal conditions concerning purchase contracts and contracts for specific work, - be able to identify and evaluate elements and legal consequences of trade contracts, - be able to describe the course and legal consequences of writ-of-payment proceedings, complaints procedure, enforcement proceedings, bankruptcy proceedings, - be able to explain and present those regulations of craft law and business law which have special importance for SMEs, - be able to explain and present regulations of trade law and companies law, - be able to present statutory regulations that concern establishing and terminating employment relationship as well as terms of employment, - be able to present regulations of collective labor agreement and regulations of Works Council Constitution Act (German: BetrVG) and evaluate their impact on business decisions, - be able to explain basic regulations of employment protection and social insurances, - be able to explain basic structure and significance of German
Academic year (SJ)	4
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Obligatory module
Module's applicability	Basic module involving management topics belongs to the group of modules regarding economy, law and social studies

	and provides basis for the following modules: TS 3, TS 4, TPR 4 In terms of form and duration this module corresponds to the BM classes 14.3 and 14.4 classes of the BM 14 module in the Business Administration in SMEs course
Requirements for participation	Participation in classes TM 1.2 Business Law Basics
Person responsible for the module	Dr. J. Langosch
Name(s) of the teacher(s)	Dr. J. Langosch
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during apprenticeship, guest lectures,	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Brox, H./Rüthers, B./Henssler, M.: Allgemeiner Teil des BGB, 34., neu bearb. Aufl., München 2010 - Brox, H./Rüthers, B./Henssler, M.: 34., aktualisierte Aufl., München 2010 - Brox, H./Rüthers, B./Henssler, M.: Allgemeiner Teil des BGB, 18., neu bearb. Aufl., Stuttgart 2011 - Arbeitsgesetze, Beck-Texte im dtv, 77. Aufl., München 2010 Recommended additional reading - Boehme-Neßler, V./Schmidt-Rögnitz, A. (Hrsg.): Wirtschafts-recht - Basisbuch für Studium und Praxis. 2. völlig überarb. u. erw. Aufl., München, Wien 2005 - Däubler, W.: Arbeitsrecht. Ratgeber für Beruf, Praxis und Studium. 8., überarb. Aufl. Frankfurt/Main 2010

Module No./Code	TM 7
Module name	**Cost and result account**
If necessary, classes as part of module	TM 7.1 Cost and result account
Module's scope	Basics of cost and result account, breakdown of costs by type and by function of expenditure, settling cost drivers, short-term profit and loss account on the basis of full, direct and planned costing calculations
Learning outcomes	Students should: - be able to describe basics and objectives of cost and result account, - be able to distinguish the basic concepts of cost and result account, - be able to describe regulations of cost types systematization, - be able to indicate and analyze cost types in an enterprise, - be able to indicate and describe cost-generating areas, primary and secondary costs division in those areas as well as know how to create corresponding surcharge rates applied while including general costs and use them in order to divide costs into categories, - be able to create the cost accounting sheet in an enterprise, - be able to identify calculating methods and use them to set primary costs and offered price - understand short-term effects of the profit and loss account for managing an enterprise, - be able to describe the differences between actual, normal and planned costs account, - be able to differentiate between full costing and direct costing, - be able to describe the procedures of contribution margin analysis, - be able to apply the procedures of contribution margin analysis to support short-term decisions regarding production and sales - be able to describe tools for creating a planned costs account - be able to apply and evaluate planned costs accounting
Academic year (SJ)	4
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Obligatory module

Module's applicability	Basic module involving management topics, which belongs to the group of modules regarding economics, law and social studies, and provides basis for the following modules: TM 8 and TPR 4 In terms of form and duration this module corresponds to the BM 17.1 class in module BM 17 in the Business Administration in SMEs course
Requirements for participation	Participation in classes TM 1.1 Basics of enterprise management
Person responsible for the module	Prof. Dr. F. Bönte
Name(s) of the teacher(s)	Prof. Dr. F. Bönte
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during apprenticeship, guest lectures,	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Olfert, K.: Kostenrechnung. 16., verbesserte und aktualisierte Aufl., Ludwigshafen 2010 - Steger, J.: Kosten- und Leistungsrechnung: Einführung in das betriebliche Rechnungswesen. 5. Aufl., München 2010 Recommended additional reading - Haberstock, L. / Breithecker, V.: Kostenrechnung 1. Einführung mit Fragen, Aufgaben, einer Fallstudie und Lösungen. 13., neu bearb. Aufl., Berlin 2008 - Haberstock, L. / Breithecker, V.: Kostenrechnung 2. (Grenz-) Plankostenrechnung mit Fragen, Aufgaben und Lösungen. 10., neu bearbeitete Aufl. 2008 - Bellenberg, K.: Kalkulation in Kleinbetrieben. 3. Aufl., Berlin 2008

Module No./Code	TM 8
Module name	**Process management and organizational development**
If necessary, classes as part of module	TM 8.1 Basics of process structure and organization TM 8.2 Process management TM 8.3 Organizational development
Module's scope	- Basics of organization, organizational structure, organization of flow structure, particular structural features of SMEs organization - Basics of process management, using ERP software to support business processes in SMEs, problematic areas of process management in SMEs - Optimization of the procurement process in the construction technology sector - Basics of organizational development, reorganization as a part of organizational development, managing changes in SMEs
Learning outcomes	Students should: - be able to present basics of process structure and organization, - understand process management as a holistic and continuous process of the development of company's structures and processes, - be able to describe and discus basics of business processes handling through IT systems and technologies, - be able to demonstrate particular features of process management in SMEs, - analyze organizational forms and evaluate their application in SMEs, - be able to describe and apply task and job creating analysis as basis for the development of organizational structures at an enterprise, - be able to explain and apply planning methods, - understand organizational development as an integral part of process management, - be able to present basics of organizational development, - be able to indicate opportunities for change management in SMEs, - be able to present and apply tools for changes management.
Academic year (SJ)	4
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125

Module type (obligatory,	Obligatory module
Module's applicability	Basic module involving management topics, which belongs to the group of modules regarding economics, law and social studies. In terms of form and duration this module corresponds to the BM 18.1, BM 18.2 and BM 18.3 class in module BM 18 in the Business Administration in SMEs course
Requirements for participation	Participation in classes TÜ 2.1 Basics of project management
Person responsible for the module	Prof. Dr. J. von Kiedrowski
Name(s) of the teacher(s)	Prof. Dr. J. von Kiedrowski
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during apprenticeship, guest lectures,	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Vahs, D.: Organisation. Ein Lehr- und Managementbuch. 9. Aufl., Stuttgart 2015 - Schmelzer, H. J. / Sesselmann, W.: Geschäftsprozessmanagement in der Praxis 8., überarbeitete und erweiterte Auflage, München 2013 Recommended additional reading - Wolters, M. / Kaschny, M.: Geschäftsprozessmanagement in KMU. Dargestellt anhand der Auftragsabwicklung in der Gebäudetechnik. Lohmar, Köln 2010 - Fischermanns, G.: Praxishandbuch Prozessmanagement - Das Standardwerk auf Basis des BPM Framework ibo-Prozessfenster® 11., grundlegend überarb. Auflage, Wettenberg 2013 - Bleicher, K.: Organisation. Strategien, Strukturen, Kulturen. 2. Aufl., Wiesbaden 1991 - Siegenthaler, M.: ERP für KMU. Praxisleitfaden: Richtig evaluieren und einführen. Rheinfelden 2005

B. Interdisciplinary

Module No./Code	TÜ 1
Module name	**Scientific work and research methodology**
If necessary, classes as part of module	TÜ 1.1 Scientific work TÜ 1.2 Basics of research methodology
Module's scope	- Techniques of scientific work, basic learning and working strategies, time management, motivation and concentration, preparation and monitoring of classes, preparing for exam, obtaining information, analysis and assessment of information, writing a scientific paper, adhering to formal requirements of a scientific paper - Presentation of empirical social studies, scientific theory, cognitive interest, quantitative and qualitative methods, - Review of engineering studies and development methods, laboratory experiment, prototype, pilot production run, field test
Learning outcomes	Students should: - be able to demonstrate knowledge of learning and working strategies and be able to define and use them in accordance with their needs, - have knowledge of techniques of scientific work and the ability to use them in the context of own studying, - be able to use principles of scientific work for own work (home assignment, reflections of practice, Bachelor's thesis), - be able to select and apply methods of empirical social research.
Academic year (SJ)	4
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Obligatory module
Module's applicability	Basic interdisciplinary module, which belongs to the group of integration modules and provides basis for the following modules: TS 1 - TS 4 and TPR 1 - TPR 4

Requirements for participation	- none -
Person responsible for the module	Prof. Dr. J. Kiedrowski
Name(s) of the teacher(s)	Prof. Dr. J. von Kiedrowski, Prof. Dr. U. Schaumann
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, seminar, self-study
Special information (e.g. online classes, visits during apprenticeship, guest lectures,	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Kornmeier, M.: Wissenschaftstheorie und Wissenschaftliches Arbeiten: Eine Einführung für Wirtschaftswissenschaftler. Heidelberg 2007 - Atteslander, P.: Methoden der empirischen Sozialforschung. 13., neu bearbeitete und erweiterte Auflage. Berlin 2010 Recommended additional reading - Metzger, C.: Lern- und Arbeitsstrategien. Ein Fachbuch für Studierende (mit beigelegtem Fragebogen). 11., überarbeitete Aufl., 3. Druck, Berlin 2013 - Schnell, R./Hill, P. B./Esser, E.: Methoden der empirischen Sozialforschung. München 2011

Module No./Code	TÜ 2
Module name	**Project management basics**
If necessary, classes as part of module	TÜ 2.1 Project management basics
Module's scope	Basics of project management, project planning, project management and controlling, project team management, software-supported project planning and controlling
Learning outcomes	Students should: - be able to present project management basics, - be able to differentiate and apply project planning, managing and controlling methods, - be able to structure and plan business tasks as a project, - be able to design and lead a project team, - be able to demonstrate the possibilities of software support and apply them in a project
Academic year (SJ)	2
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Obligatory module
Module's applicability	Basic interdisciplinary module, which belongs to the group of integration modules and provides basis for the following modules: TÜ 4, TS 1 - TS 4 In terms of form and duration this module corresponds to the BM 18.4 class in module BM 18 in the Business Administration in SMEs course
Requirements for participation	- none -
Person responsible for the module	Prof. Dr. J. v. Kiedrowski
Name(s) of the teacher(s)	M. Mazur
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min

Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during apprenticeship, guest lectures,	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Kraus, G. / Westermann, R.: Projektmanagement mit System. Organisation, Methoden, Steuerung. 5. Aufl. Wiesbaden 2014 Recommended additional reading - Braehmer, U.: Projektmanagement für kleine und mittlere Unternehmen. Schnelle Resultate mit knappen Ressourcen. München, Wien 2005 - Bohinc, T.: Grundlagen des Projektmanagements - Methoden, Techniken und Tools für Projektleiter. Offenbach 2010 - Majer, C./Stabauer, L.: Social competence im Projektmanagement: Projektteams führen, entwickeln, motivieren.Aufl., München, Wien 2010

Module No./Code	TÜ 3
Module name	**Communication, consulting and presentation**
If necessary, classes as part of module	TÜ 3.1 Basics of communication and consulting TÜ 3.2 Basics of creating presentations
Module's scope	- Basics of communication, establishing communication with clients, client-oriented consulting, designing meeting situations, client-oriented advice, the Harvard model, intercultural communication - Psychological basis of attention, perception and planning, delivering and evaluating a presentation, avoiding mistakes during a presentation
Learning outcomes	Students should: - be able to list psychological foundations of attention and perception, - be able to differentiate and use presentational techniques, - be able to prepare and carry out a presentation, - be able to analyze media designed for presentations as well as evaluate and use them adequately, - be able to demonstrate the possibilities of using various media, especially software designed for presentations, and be able to evaluate its application, - know basics of communication and use them as a framework for conducting discussion and offering consulting in practice, - be able to provide clients with advice and apply the Harvard model of negotiations, - understand the significance of cultural identity and differences in the context of a company as well as outside of it, - be able to analyze and evaluate intercultural communication in a company.
Academic year (SJ)	2
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Obligatory module

Module's applicability	Basic interdisciplinary module, which belongs to the group of integration modules and provides basis for the following modules: TK 1, TK 2 and TK 3, TK 7, TM 5, TS 1 - TS 4, TMS 1, TMS 2 In terms of form and duration this module corresponds to the BÜ 2.1 and BÜ 2.2 classes in module BÜ 2 in the Business Administration in SMEs course
Requirements for participation	- none -
Person responsible for the module	Prof. Dr. U. Schaumann
Name(s) of the teacher(s)	Prof. Dr. U. Schaumann
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during apprenticeship, guest lectures,	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Herbig, A. F.: Vortrags- und Präsentationstechnik: Erfolgreich und professionell vortragen und präsentieren. Norderstedt 2014 - Fischer, R. u. a.: Das Harvard-Konzept. Sachgerecht verhandeln, erfolgreich verhandeln. Frankfurt 2003 - Schulz v. Thun, F.: Miteinander reden, Bd. 1: Störungen und Klärungen, allgemeine Psychologie der Kommunikation. Reinbek 2010. Recommended additional reading - Seifert, J. W.: Visualisieren Präsentieren Moderieren. 23. Aufl. Offenbach 2009 - Lewicki, R. J. u.a.: Verhandeln mit Strategie. Das große Handbuch der Verhandlungstechniken. Zürich 1998 - Stiller, M.: Kundenberatung im persönlichen Verkauf. 1. Aufl., Wiesbaden 2006 - Rothlauf, J.: Interkulturelles Management. 2. Aufl., München u.a. 2006 - Schulz v. Thun, F. u.a.: Miteinander reden. Kommunikationspsychologie für Führungskräfte. Reinbek 2003

Module No./Code	TÜ 4
Module name	**Interdisciplinary project management at construction companies**
If necessary, classes as part of module	TÜ 4.1 Interdisciplinary project management at construction companies
Module's scope	- Projects / customer orders, work processes and business processes - Interdisciplinary organizational units, projects / interdisciplinary orders, professional boundaries, - Claims related to liability, warranty obligations (VOB), project monitoring (HOAI), - Performance of technical building management in line with DIN 32736 - Strategic level of technical building management - Use of CAFM software to support processes of technical building management - Serial and interdisciplinary planning processes of technical building management - Utility value analysis, economic and ecological
Learning outcomes	Students should: - be able to indicate and apply the basics of construction industry management, - be able to critically evaluate tasks and ways of completing them on the basis of characteristic features of project work and business processes as well as suggest alternative solutions, - be able to plan the completion of customer orders in terms of time and content, - be able to assess specialist and interdisciplinary tasks and to employ an interdisciplinary perspective, - be able to present typical construction processes and recognize as well as evaluate key construction phases, - be able to apply specific general legal provisions (particularly HWO, VOB, parts A and C, as well as HOAI), - be able to apply the legal framework to specific cases, - be able to coordinate and evaluate areas of activity, compensation claims and warranty obligations in the context of orders outside the project or a given business branch, - be able to calculate total costs and apply an approach designed to reduce costs as part of technical building management, - be able to assess central services of technical building management (in line with GEFMA), - be able to carry out interdisciplinary planning of technical infrastructure, - be able to apply assessment criteria to selection of technical options and draw up decision sheets, - be able to demonstrate and analyze the requirements and scope of computer applications designed to support technical building management (CAFM),
Academic year (SJ)	2

Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Obligatory module
Module's applicability	Basic interdisciplinary module, which belongs to the group of integration modules and provides basis for the following modules: TS 1 - TS 4 and TPR 2 - TPR 4
Requirements for participation	Participation in classes TÜ 2.1 Basics of project management
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	S. Leisner
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Ahrens,H./ Klemens,B./ Muchowski,L, (2014): Handbuch Projektsteuerung – Baumanagement, 5. Auflage, Fraunhofer IRB-Verlag, - Braehmer, U.: Projektmanagement für kleine und mittlere Unternehmen. Das Praxisbuch für den Mittelstand. 2., überarb. Aufl., München 2009 - Nävy, J.: Facility Management. Grundlagen – Computerunterstützung – Systemeinführung – Anwendungsbeispiele. 4., aktualisierte u. erg. Aufl., Heidelberg 2006 Recommended additional reading - Berner / Fritz / u.a.: Grundlagen der Baubetriebslehre1, 2 . Auflage, - Springer Verlag, 2003 - Klein, H.: Basics Projektplanung. Basel 2007 - Krimmling, J.: Facility Management. Strukturen und methodische Instrumente. 2., aktualisierte Aufl., Stuttgart 2008 - Bohinc, T.: Grundlagen des Projektmanagements - Methoden, Techniken und Tools für Projektleiter. Offenbach 2010 - Zehrer, H. / Sasse, E., (2014) : Handbuch Facility Management. Grundlagen, Arbeitsfelder. GEFMA. 47. Aktualisierung, - DIN 32736: Gebäudemanagement, Begriffe und Leistungen. Beuth-Verlag, Berlin 2000

Module No./Code	TÜ 5
Module name	**English for Special Purposes**
If necessary, classes as part of module	TÜ 5.1 Basics of English for engineering
Module's scope	- Basics of syntax and lexis at the B1 level (ERK) - Basics of Business/Office Communication: written and spoken communication in English, including Letter Writing, Telephoning, Adequate language for emails, meetings and conferences, Presentations, Discussion and Debating Techniques - Specialized texts for specific purposes regarding electronic engineering, system engineering and construction technology - Working on subjects regarding comprehensive building management and technologies - Planning, preparing, calculating and assessment of the development, risk and prospect of success of construction projects in connection with topics on electronic engineering, installation engineering, construction technology, renewable energy
Learning outcomes	Students should: - be able to clearly communicate in speaking and writing in English in a business and office environment, - understand technical English texts regarding professional topics, - use technical vocabulary and terms in their professional context, - be able to describe technical states in English during conversations with colleagues, clients and suppliers, - be able to provide clients with advice, - become familiar with technical and business English topics, as well as… • understand texts and speech regarding management of buildings' renewable energy and be able to adequately respond in professional situations, • be able to actively participate in discussions regarding topics connected with the studied subject without prior preparation, • use a range of syntactic and lexical skills in order to present experiences, facts, events and their context, as well as to justify opinions, • speak about plans, assessments and estimates of future professional developments within a relevant area.
Academic year (SJ)	2

Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Obligatory module
Module's applicability	An interdisciplinary module which belongs to the group of soft skills modules
Requirements for participation	- none -
Person responsible for the module	Prof. Dr. J. von Kiedrowski
Name(s) of the teacher(s)	Henning Prüß, currently no information available:
Course language	English
Exam type / requirements for awarding academic achievement	Written exam (90 min) and oral exam (20 min)
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during apprenticeship, guest lectures,	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Simon Campbell: English for the Energy Industry; Short Course Series, Cornelsen Verlag 2008 - Mark Ibbotson & Jeremy Day: Cambridge English for Engineering, Cambridge Publishing 2008 Recommended additional reading/online resources: - Möllerke, Georg: Dictionary of Electrical and Mechanical Engineering. Technik-Wörterbuch mit phonetischer Umschrift Englisch – Deutsch / Deutsch – Englisch, VDE Verlag 2007 - Boonkboon.com: Online resources which can be downloaded (Engineering) - http://bookboon.com/de/ingenieurwesen-ebooks - Other online resources (energy and transmission sector): www.irelp.org; www.ecreee.org; www.tafesa.edu.au;

C. Basic technical modules

Module No./Code	TK 1
Module name	**Basics of technical building systems I**
If necessary, classes as part of module	TK 1.1 Mathematical basics I TK 1.2 Electrical engineering
Module's scope	- Arithmetic (power, root, logarithms, equations), rational and irrational functions, complex numbers - Basic electric variables (electricity, voltage, resistance, power, efficiency, electric operation), capacity and inductivity in direct and alternating current circuits with resistors, condensers and coils, three-phase alternating current (symmetrical and asymmetrical) – dynamic resistance, passive power compensation, generator and engine principles – types, structure and description, operation, transformer's operation principle – construction and operation, cable dimensions, types of device connections, cable and installation schematics, circuit symbols, documentation - Fire protection measures for electrical equipment and systems - Basic concepts of measurement technology, SI units, evaluation of measurement results and error calculation, instrumentation amplifiers, methods and instruments of measuring temperature, pressure, torque, force, air, water, lighting, acceleration, speed; length and flow
Learning outcomes	Students should: - develop logical and analytical ways of thinking as well as mathematical abstract thinking, - be able to apply mathematical processes and methods of approaching technical tasks, - be able to adequately apply electronic engineering concepts and basic variables, - be able to create and complete professional tasks based on basics of electronic engineering, particularly energy technology, - be able to calculate and evaluate selected electronic engineering solutions, particularly in alternating and three-phase current systems, - be able to select and evaluate metrological procedures in technical construction systems, - be able to collect and keep record of measurement data in an adequate way, analyze and assess measurement irregularities, - be able to measure and plan wiring systems in electrical installation technology, - be able to select electrical protection measures and assess their efficiency,

	- be able to advise clients on choosing energy-efficient end-use appliances, - be able to offer consulting services regarding electrical engineering in the context of buildings' energy consulting.
Academic year (SJ)	1
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	8
Total hours	200
Module type (obligatory,	Obligatory module
Module's applicability	Basic module involving technical topics, which belongs to the group of engineering and scientific modules and provides basis for the following modules: TK 4, TK5, TK 9, TS 1, TS 3, TS 4,
Requirements for participation	- none -
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	F. Fasold, U. Tietz
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	4.4 % (8/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Moeller, Franz (2011): Grundlagen der Elektrotechnik, 22. Auflage. Wiesbaden : Vieweg + Teubner - Harriehausen, T. Schwarzenau, D. (2013): Moeller Grundlagen der Elektrotechnik, 23. Auflage, Springer-Verlag - Westermann, Thomas (2011): Mathematik für Ingenieure : Ein anwendungsorientiertes Lehrbuch. Berlin, Heidelberg : Springer-Verlag Recommended additional reading - Papula, Lothar (2014): Mathematik für Ingenieure und Naturwissenschaftler. Ein Lehr- und Arbeitsbuch für das Grundstudium. 14. Auflage, Wiesbaden: Springer-Verlag - Becker, Bernd [u.a.] (2005): Technische Informatik : eine Einführung. München [u.a.] : Pearson Studium - Schrüfer, Elmar (2007): Elektrische Messtechnik, 9. Auflage. München Hanser Verlag - Merz, Hermann, (2008): Elektrische Maschinen und Antriebe: Grundlagen und Berechnungsbeispiele für Einsteiger. Berlin [u.a.] : VDE-Verl.

Module No./Code	TK 2
Module name	**Basics of technical building systems II**
If necessary, classes as part of module	TK 2.1 Mathematical basics TK 2.2 Thermodynamics and heat exchange TK 2.3 Calculating the heating load
Module's scope	- Integral and differential calculus in the context of natural sciences, infinitesimal calculus, statistics - Basic thermodynamic concepts, thermodynamic systems (open, closed, adiabatic), state variables (quantity of matter, pressure, temperature, thermal balance), changes of the thermodynamic state, first and second rule of thermodynamics, enthropy, exergy, anergy - Types of heat exchange (heat transfer, heat flux density, heat conduction, heat exchange), convection (free and forced convection), heat radiation, condensation and evaporation, chemical reactions and bonds, combustion technology, oxidation, structure and properties of metal materials (steel, alloys, cast iron, copper, aluminum), corrosion - Calculation of the heating load according to DIN EN 12831, supply of hot water (systems, components and their mode of operation)
Learning outcomes	Students should: - be able to apply mathematical processes and methods of solving thermodynamic and thermotechnical processes - be able to apply and calculate the principles of thermodynamics of technological processes and construction machinery (e.g. heat pumps), - be able to apply, calculate and evaluate the basics of heat exchange in construction systems, - be able to assess the mechanisms of operation related to combustion technology and optimize them from the energy perspective, - recognise hydraulic systems and know how to present specific solutions, - be able to calculate thermal loads for a particular building, - be able to measure hot water supply systems
Academic year (SJ)	1
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	8
Total hours	200
Module type (obligatory,	Obligatory module
Module's applicability	Basic module involving technical topics, which belongs to the group of engineering and scientific modules and provides basis for the following modules: TK 6, TK 8, TS 2, TS 4, TPR 1 - TPR

Requirements for participation	Participation in classes TK 1.1 Mathematical basics I
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	J. Willhöft, currently no information available
Course language	German
Exam type / requirements for awarding academic achievement points	Written exam, 120 min
Grade's contribution to the total grade	4.4 % (8/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during apprenticeship, guest lectures,	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Cerbe, Günter (2011): Technische Thermodynamik : theoretische Grundlagen und praktische Anwendungen. 16. aktualisierte Aufl. München Hanser Verlag - Baehr, H.-D.(2000):Thermodynamik, Grundlagen und technische Anwendungen, Springer-Verlag, Berlin - Hammer, Karl (1995): Grundkurs der Physik 1 Mechanik – Wärmelehre. 7. Aufl. R. Oldenbourg Verlag Recommended additional reading - Pistohl (2007): Handbuch der Gebäudetechnik, Planungsgrundlagen und Beispiele, Band 1 und 2, Werner –Verlag - Recknagel, H., Sprenger, E., Albers, K.-J. (Hrsg., 2014): Taschenbuch für Heizung + Klimatechnik. 77. Aufl., Deutscher Industrieverlag

Module No./Code	TK 3
Module name	**Basics of technical building systems III**
If necessary, classes as part of module	TK 3.1 Mathematical Basics III TK 3.2 Building structure and physics TK 3.3 Chemicals and building materials
Module's scope	- trigonometry and vector calculations in natural sciences, trigonometric functions, Tales's theorem - Building structure (standards, safety), central force systems, graphical methods, principle of intersection and internal forces, linear load-bearing structures, load influence (operational load, wind, snow, water pressure, ground pressure), DIN standards and guidelines for construction and building projects, technical drawing in line with building engineering standards - Building chemicals and materials, physical and chemical properties of building materials, metallic, non-metallic, inorganic and organic building materials, insulation materials, building material processing standards - Building physics, heat conduction, heat transfer u-values, thermal bridges, fire sound, heat and moisture protection, temperature profile and glazing diagram (EDP)
Learning outcomes	Students should: - be able to solve basic construction tasks using mathematical processes and methods, - be able to analyze and take into account forces and moments in selected construction elements, - be able to determine and evaluate cross-sectional forces in static systems, - be able to distinguish and apply selected methods of building construction, - be able to design detailed aspects in civil engineering in accordance with standards, - be able to apply basic knowledge of building physics and take structural and technical criteria into account in general planning concepts, - be able to assess the properties of building materials and their components on the basis of physical and chemical parameters, and to select building materials according to application and their processing in accordance with standards,
Academic year (SJ)	2
Module's duration	0.5 SJ

Module's availability	In each academic year
ECTS points awarded	8
Total hours	200
Module type (obligatory,	Obligatory module
Module's applicability	Basic module involving technical topics, which belongs to the group of engineering and scientific modules and provides basis for the following modules: TK 7, TPR 1 - TPR 4
Requirements for participation	Participation in classes - TK 1.1 Mathematical basics I - TK 2.1 Mathematical basics
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	H.-L. von Stosch, U. Schneider
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	4.4 % (8/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Duzia,T./ Bogusch, N.(2014): Basiswissen Bauphysik, Grundlagen des Wärme- und Feuchteschutzes, 2. Auflage, Fraunhofer IRB-Verlag - Pech, Anton; Jens, Klaus (2005): Baukonstruktionen (ausgewählte Bände) Vienna: Springer-Verlag - Westermann, Thomas (2011): Mathematik für Ingenieure : Ein anwendungsorientiertes Lehrbuch. Berlin, Heidelberg : Springer-Verlag Recommended additional reading - Lohmeyer, Gottfried C. O. [u.a.] (2010): Praktische Bauphysik: eine Einführung mit Berechnungsbeispielen. Wiesbaden: Vieweg + Teubner, 2010 - Benedix, Roland (2011): Bauchemie : Einführung in die Chemie für Bauingenieure und Architekten. Wiesbaden : Vieweg + Teubner, 2011 - Hoischen, Hans (2007): Technisches Zeichnen. Grundlagen, Normen, Beispiele, Darstellende Geometrie 31. Aufl. Cornelsen - Krings, Wolfgang / Wanner, Artur (2009) Kleine Baustatik: Grundlagen der Statik und Berechnung von Bauteilen: 14., überarb. u. akt. Auflage. Vieweg+Teubner-Verlag - Zilch, Konrad (Hrsg.) (2002): Handbuch für Bauingenieure : Technik, Organisation und Wirtschaftlichkeit -Fachwissen in einer Hand. Berlin [u.a.] : Springer

Module No./Code	TK 4
Module name	**Renewable energy sources and systems**
If necessary, classes as part of module	TK 4.1 Energy policy and energy law TK 4.2 Renewable energy sources and systems
Module's scope	- resources, production and energy needs; limits of conventional energy sources, energy law and climate policy at national and international level (regulations, guidelines, directives), economic and ecological consequences of energy consumption, climate change - renewable energy sources, use of biomass on the example of installations fueled with wood and pellets (construction, principle of operation, components, dimensioning, economic efficiency, safety), - practical research laboratory 'Solid fuel firing' (efficiency level, emission measurement, primary energy analysis), - use of solar energy demonstrated by photovoltaic installations and systems (design, principle of operation, components, dimensioning, safety, economic efficiency) - use of solar energy demonstrated by solar-thermal installations and systems (design, principle of operation, components, dimensioning, safety, economic efficiency), - use of geothermal energy on the example of heat pumps (design, principle of operation, components, dimensioning, safety, economic efficiency), - "Heat pumps" practical research laboratory, (calculating COP, SPF, final and primary energy analysis), - the use of regenerative hydrogen on the example of a fuel cell (design, principle of operation, degree of technology advancement, economic efficiency), - development of energy concepts, technology of hybrid systems.
Learning outcomes	Students should: - be able to assess the development of energy resources and their relevance to national and international energy needs and make recommendations in the context of energy consultation, - be able to assess the economic and ecological consequences of energy production and energy requirements, and identify main areas for consultation on this basis, - analyze the objectives of German and European energy and climate policies, taking into account relevant provisions and recommendations, - be able to assess methods and procedures of electricity and heat generation with respect to economic and environmental consequences, - be able to demonstrate basics and advantages of

	- be able to demonstrate areas of solar energy use and calculate the energy yield, - be able to explain the operation of a photovoltaic system and assess the technical performance of photovoltaic (PV) systems, - be able to suggest areas of application for PV systems and solar thermal systems, - be able to evaluate the design, principle of operation and performance profiles of solar thermal systems, - be able to propose areas of application of geothermal energy using heat pumps and heat recovery systems as an example, and indicate the planning stages of heat pump installations, - be able to assess the integration level of electrical and hydraulic heat pumps, - be able to identify and apply regulations of law regarding safety technology related to the installation and operation of heat pumps and heat recovery systems, - be able to describe and evaluate procedures and methods of producing regenerative hydrogen as an energy carrier and its application using a fuel cell as an example, - be able to carry out an economic and environmental assessment of fuel cell technology, - be able to present two- and multi-component heat production or technology of such an installation as a result of initial planning, and assess it from the energy point of view.
Academic year (SJ)	1
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175
Module type (obligatory,	Obligatory module
Module's applicability	Basic module involving technical topics, which belongs to the group of engineering and scientific modules and provides basis for the following modules: TK 8, TS 1, TS 2, TS 4, TPR
Requirements for participation	Participation in module classes - TK 1 Basics of technical building systems I - TK 2 Basics of technical building systems II
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	Prof. E. P. Schradieck
Course language	German

Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.8 % (7/180)
Teaching and learning methods	Lectures, practical classes, practical research laboratory, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory readings: (partly in excerpt, more information will be provided during the course): - Suttor, W. (2013) : Das Mini-Blockheizkraftwerk, Ein Leitfaden für Anwender, Fraunhofer IRB-Verlag, - Droste-Franke, Bert; Berg, Holger; Gethmann, Carl Friedrich; Kötter, Annette; Krüger, Jörg; Mause, Karsten et al. (2009): Brennstoffzellen und Virtuelle Kraftwerke. Energie-, umwelt- und technologiepolitische Aspekte einer effizienten Hausenergieversorgung. - Hartmann, Frank; Schwarzburger, Heiko (2009): Systemtechnik für Wärmepumpen. Solar- und Umweltwärme für Wohngebäude. München: Hüthig und Pflaum. - Kaltschmitt, Martin (2006): Erneuerbare Energien. Systemtechnik, Wirtschaftlichkeit, Umweltaspekte. 4., neu bearb. und erw. Aufl. München: Springer. - Späte, Frank; Ladener, Heinz; Bollin, Elmar (2008): Solaranlagen. Handbuch der thermischen Solarenergienutzung. 10., verb. und erw. Aufl. Staufen bei Freiburg: Ökobuch-Verl. Recommended additional reading - Watter, Holger (2009): Nachhaltige Energiesysteme. Grund- lagen, Systemtechnik und Anwendungsbeispiele aus der Praxis : mit 45 Tabellen. 1. Aufl. Wiesbaden: Vieweg+Teubner Verlag /GWV Fachverlage GmbH Wiesbaden (Energie und Umwelt). - Staiß, Frithjof (2007): Erneuerbare Energien 2007. Hrsg. von der Stiftung Energieforschung Baden-Württemberg im Bieberstein Verlag Radebeul. - Kasper, B.-R; Heidler, K (2008): Solarthermische Anlagen. 8. Aufl., überarb. Neuaufl. Frankfurt, Main: DGS Landesverband Berlin Brandenburg; VWEW Energieverl.

Module No./Code	TK 5
Module name	**Building systems as technical and functional systems I**
If necessary, classes as part of module	TK 5.1 Information technology TK 5.2 Lighting technology
Module's scope	- Analogue and digital signal processing, digital basic circuits, structure and operation of computer systems and software, basic program structure (syntax, variables, assignments), bus systems, network models, network protocols, voice and data transmission, telecommunication systems, home monitoring systems, intelligent homes, planning electrical systems using CAD (Plancal) software, - Lighting technology, lighting design and simulation (Dialux), requirements, effects and types of lighting
Learning outcomes	Students should: - be able to evaluate ways and methods of processing analogue and digital signals, - be able to design basic digital circuits and analyze simple digital circuits, - be able to evaluate algorithms and program structures and develop them in relation to specific applications, - be able to assess methods and models of digital transmission and processing of information, - be able to use computer systems and software in a way related to a specific application, taking into account cost-effectiveness, - be able to plan, calculate and evaluate the electrotechnical performance of power systems in buildings, - be able to assess installation plans and wiring diagrams and create technical documentation (CAD), - apply ways and methods of planning telecommunication systems and computer networks, - be able to use and evaluate measuring methods to detect errors in communication networks, - be able to analyze the areas of application of smart homes and demonstrate their energy-related benefits, - be able to use the basic parameters associated with lighting for a specific application, - be able to define lighting requirements, apply lighting planning procedures, comply with commercial lighting regulations and choose energy-efficient lighting equipment for each customer, - be able to demonstrate the economic efficiency of individual lighting installations and their control in the context of consulting services.
Academic year (SJ)	3

Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Obligatory module
Module's applicability	Basic module involving management topics, which belongs to the group of modules regarding economics, law and social studies, and provides basis for the following modules: TK 9, TS 3, TPR 1 - TPR 4
Requirements for participation	Participation in classes TK 1 Basics of technical building systems I
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	F. Fasold, U. Tietz
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Becker, Bernd [u.a.] (2005): Technische Informatik : eine Einführung. München [u.a.] : Pearson Studium - Pistohl, Wolfram (2007): Handbuch der Gebäudetechnik. Allgemeines, Sanitär, Elektro, Gas. 6., neu bearb. und erw. Aufl. München: Werner - Pistohl, Wolfram (2007): Handbuch der Gebäudetechnik. Heizung, Lüftung, Beleuchtung, Energiesparen. 6., neubearb. und erw. Aufl. Düsseldorf: Werner-Verl. Recommended additional reading - Hösl, Alfred, Ayx, Roland, Busch, Hans Werner (2003): Die vorschriftsmäßige Elektroinstallation, 18. neu bearbeitete Auflage, Heidelberg: Hüthing-Verlag. - Häberle, Heinz O (2007): Einführung in die Elektroinstallation. 4., neubearb. u. erw. Aufl. München: Hüthig und Pflaum - Schmid, Christoph (2005): Heizung, Lüftung, Elektrizität. Energietechnik im Gebäude. 3., durchges. u. akt. Aufl. Zürich: vdf Hochschulverl. an der ETH Zürich (Bau und Energie, Bd. 5).

Module No./Code	TK 6
Module name	**Building systems as technical and functional systems II**
If necessary, classes as part of module	TK 6.1 Industrial installation technology TK 6.2 Installation planning
Module's scope	- Basic concepts, standards, guidelines and legal requirements for heating, air conditioning and ventilation (HVAC), standards and technical regulations, guidelines, legal regulations (in particular EnEG, EnEV, DIN DVGW) - HVAC installation technology and systems, components and their mode of operation - Practical research laboratory "Air-conditioning technology" (metrological reconstruction of measured values in Mollier's graph (H-X) - Practical research laboratory "Ventilation technology" (estimating heat recovery levels) - System solutions for gas, water, heating and ventilation systems - Practical research laboratory "System hydraulics" (hydraulic compensation) - Design of gas, water, heating and ventilation systems, calculation of piping systems, calculation of sewer networks, design of various heating surfaces according to EN 442 and EN 1264 standards, hydraulic compensation,
Learning outcomes	Students should: - be able to plan and analyze heating systems, and to measure and evaluate the structures and functions of various system components in accordance with standards, - be able to evaluate different types, systems and applications of heating systems and suggest customized solutions, - be able to apply procedures and methods of identifying materials, installation techniques and dimensioning, as well as thermal protection for heat transfer lines, - be able to plan and calculate ventilation and air-conditioning systems in accordance with applicable standards and regulations, and to set requirements for air quality and conditions in buildings based on physiological needs, - be able to evaluate different types and systems of ventilation and air-conditioning systems and provide recommendations for individual customers, - be able to dimension heating surfaces in relation to the requirements of the building, - be able to analyze design criteria for heating surfaces, - be able to carry out energy assessments of heating and ventilation systems,
Academic year (SJ)	3

Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Obligatory module
Module's applicability	Basic module involving management topics, which belongs to the group of modules regarding economics, law and social studies, and provides basis for the following modules: TK 9, TS 2, TS 4, TPR 1 - TPR 4
Requirements for participation	Participation in classes TK 2 Basics of technical building systems II
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	J. Willhöft
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, practical research laboratory, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Krimmling, Jörn; Preuß, André (2008): Atlas Gebäudetechnik. Grundlagen, Konstruktionen, Details ; mit 200 Tabellen. Köln: Müller. - Pech, Anton; Jens, Klaus (2005): Heizung und Kühlung. Vienna: Springer-Verlag/Wien (Baukonstruktionen, 15). - Schmid, Christoph (2005): Heizung, Lüftung, Elektrizität. Energietechnik im Gebäude. 3., durchges. u. akt. Aufl. Zürich: vdf Hochschulverl. an der ETH Zürich (Bau und Energie, Bd. 5). Recommended additional reading - DIN EN 12831 (2003), Verfahren zur Berechnung der Norm-Heizlast, Beuth-Verlag, Berlin,

Module No./Code	TK 7
Module name	**Energy efficiency and thermal insulation in buildings**
If necessary, classes as part of module	TK 7.1 Basics of energy efficiency and thermal protection in buildings TK 7.2 Economic efficiency of renovation works carried out in buildings
Module's scope	- Legal and policy requirements (in particular EnEV, EU Energy Performance of Buildings Directive EPBD, Heating Costs Regulation), low energy standard, passive house standard, house plus energy, verification of thermal insulation results, potential renovation activities in terms of energy performance and their financial support - Practical research laboratory "Thermography" (recording of surface temperatures and analysis of thermographic images, discussion of errors) - Practical research laboratory "Tightness measurement" (Building tightness measurements using the Blower Door method, analysis and evaluation of measurement results) - Planning, calculation and simulation of heat protection measures with software support, energy balance with software support - Economic efficiency of building renovation activities, creation and evaluation of energy certificates
Learning outcomes	Students should: - be able to analyze the energy needs of a building and plan its energy supply taking into account economic and ecological aspects, - be able to apply the legal provisions of the EEG, EEWärmeG, EnEG, EnEV and the EU directive on the energy performance of buildings using practical examples of building renovation, - be able to justify the need for building renovation aimed at energy efficiency, identify energy saving potential, present the cost-effectiveness of the renovation activities and advise clients on energy efficiency issues, taking into account the subsidy schemes, - take into account the building physics requirements for building materials and insulation materials in the area of thermal insulation when planning, - be able to create and evaluate calculations and verification procedures for thermal components and thermal bridges, - be able to plan, calculate and computer simulate thermal insulation parameters of external walls, windows, roofs and cellars, - be able to assess test methods to ensure the tightness of buildings and interpret measured values as well as assess and quantify remedial measures in economic and environmental terms,

	and to plan adequate solutions, be able to implement individual levels of energy demand in a planning manner and create energy benchmarking.
Academic year (SJ)	3
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150
Module type (obligatory,	Obligatory module
Module's applicability	Basic module involving technical topics, which belongs to the group of engineering and scientific modules and provides basis for the following modules: TPR 1 - TPR 4 modules.
Requirements for participation	Participation in module classes - TM 3 Investments and financing - TK 3 Basics of technical building systems III
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	H.-L. von Stosch, U. Schneider
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Bauer, Helmut (2008): Handbuch Gebäudeenergieberatung. Praxisleitfaden Gebäudeenergieberater/in (HWK) ; [energieoptimiertes Bauen und Sanieren ; Grund- und Fachwissen zum Lernen und Nachschlagen für alle Gewerke ; EnEV und Energieausweise ; mit Ausblick EnEV 2009]. 2. überarb. und aktualisierte Aufl. Geislingen/Steige: Maurer. - Schulze Darup, Burkhard (2009): Energieeffiziente Wohngebäude. 3., vollst. überarb. Aufl. Berlin: Verl. Solarpraxis (BINE-Informationspaket). - Simon, Günther (2009): Das energieoptimierte Haus. Planungshandbuch mit Projektbeispielen. 2., überarb. u. aktualis. Aufl. Berlin: Bauwerk. Recommended additional reading - Kerschberger, Alfred; Brillinger, Martin; Binder, Markus (2007): Energieeffizient Sanieren. Mit innovativer Technik

	zum Niedrigenergiestandard. 1. Aufl. Berlin: Solarpraxis AG. - Kadel, Peter (2008): Gebäude-Energieberatung. Grundlagen und Praxis. 2., durchges. Aufl. München: Hüthig & Pflaum (de-Fachwissen). - Burgtorff, Walter (2009): Energieausweise verstehen. Technik, Kosten, Konsequenzen. Stuttgart: Fraunhofer-IRB-Verl. - Energieeinsparverordnung (EnEV 2016), Verordnung über energiesparenden Wärmeschutz und energiesparende Anlagentechnik, BGBl. - Duzia,T./ Bogusch, N.(2014): Basiswissen Bauphysik, Grundlagen des Wärme- und Feuchteschutzes, 2. Auflage, Fraunhofer IRB-Verlag

Module No./Code	TK 8
Module name	**Processing, distribution and automation of energy in building system technology**
If necessary, classes as part of module	TK 8.1 Energy conversion and distribution TK 8.2 Energy use
Module's scope	- Energy conversion (on the example of combined heat and power generation - CHP), energy and ecological assessment of CHP (efficiency, effectiveness, pollution balance), - Practical research laboratory "local heat and power plant" (performance measurements: total efficiency, thermal and electrical efficiency, determination of the electric energy coefficient) - System inspection (local CHP plant, combustion engine, Stirling engine, micro gas turbines, steam engine, fuel cell types) and characteristic values, approval and registration procedures, installation site, fuel supply and exhaust, installation components and technical integration with existing building installations, CHP plant dimensioning with load profile - Energy forms and measurement methods (mechanical, electromagnetic, chemical, thermal, field, vacuum, residual energy), economic efficiency, technical implementation and ecological evaluation of energy transport networks, thermal and electrical energy storage, decentralised energy supply (concepts, processes, methods, virtual power plants) - Energy consumption, types and extent of energy consumption in buildings, energy consumption including economic and environmental aspects
Learning outcomes	Students should: - be able to describe and justify concepts, procedures and methods for environmentally responsible energy use, - be able to calculate energy conversion processes, - be able to perform energy calculations based on data provided by customers, - be able to apply methods and procedures of calculation dimensioning of electricity and heat storage and assess their economic and ecological impact, - be able to assess technical, economic and environmental aspects of energy transportation systems, - be able to assess network control procedures and demonstrate the interconnection of different energy sources in buildings, - be able to determine the costs of energy purchase, take into account energy measurement devices, regulations and energy standards when planning, - be able to assess energy, financial and environmental benefits on the basis of combined heat and power generation (CHP),

	- be able to explain the procedures and methods of cogeneration, describe installation variants and identify and interpret the numerical data and assessment parameters to describe capacity and efficiency, - be able to identify and plan installation components, application areas and technological integration of local heat and power plants in existing building installations, - be able to carry out program simulations of CHP systems and demonstrate their economic efficiency.
Academic year (SJ)	3
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150
Module type (obligatory,	Obligatory module
Module's applicability	Basic module involving technical topics, which belongs to the group of engineering and scientific modules and provides basis for the following modules: TS 4, TPR 1 - TPR 4.
Requirements for participation	Participation in module classes - TK 1 Basics of technical building systems I - TK Basics of technical building systems II - TK 6 Building systems as technical and functional systems II
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	Prof. E. P. Schradieck
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, practical research laboratory, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: (partly in excerpt, more information will be provided during the course): - Rebhan, Eckhard (2002): Energiehandbuch. Gewinnung, Wandlung und Nutzung von Energie ; mit 202 Tabellen. Berlin: Springer. - Schaumann, Gunter; Schmitz, Karl W (2009): Kraft-Wärme-Kopplung. 4., vollst. bearb. u. erw. Aufl. Berlin: Springer Berlin (VDI-Buch). - Schwab, Adolf J (2009): Elektroenergiesysteme. Erzeugung,

	Transport, Übertragung und Verteilung elektrischer Energie. - Steck, Michael Roon Serafin von (2009): Dezentrale Bereitstellung von Strom und Wärme. Effizienzvorteile,Techniken, Potenziale und das Konzept des virtuellen Kraftwerks. In: uwf - UmweltWirtschaftsForum, Jg. 2009, H. Volume 17, No. 4, S. 313–319. - Thomas, Bernd (2007): Mini-Blockheizkraftwerke. Grundlagen, Gerätetechnik, Betriebsdaten. 1. Aufl. Würzburg: Vogel. Recommended additional reading - Baden-Württembergischer Handwerkstag e.V. (Hrsg., 2014): Handbuch Gebäudeenergieberatung: Praxisleitfaden Gebäudeenergieberater/in (HWK) - Wasserstoff und Brennstoffzellen (2014)– Technologie für eine nachhaltige Zukunft, Kompendium zum 25-jährigen Jubiläum der Wasserstoff-Gesellschaft Hamburg e.V. - Suttor, Wolfgang; Johler, Matthias; Weisenberger, Dietmar (2009): Das Mini-Blockheizkraftwerk. Eine Heizung, die auch Strom erzeugt; mit neuen Gesetzen und Fördermaßnahmen ab 1.1.2009. 5., überarb. und erw. Aufl. Heidelberg: Müller (Energietechnik). - VDI 4655 (2008), Referenzlastprofile von Ein- und Mehrfamilienhäusern für den Einsatz von KWK-Anlagen, Beuth-Verlag, Berlin - VDI 4656 (2011), Planung und Dimensionierung von Mikro-KWK-Anlagen, Beuth-Verlag, Berlin - VDI 206, Blatt 7 (1988) , Wirtschaftlichkeit gebäudetechnischer Anlagen, Grundlagen der Kostenberechnung, Blockheizkraftwerke, Beuth-Verlag, Berlin

Module No./Code	TK 9
Module name	**Measurement, monitoring, regulation and automation in building system technology**
If necessary, classes as part of module	TK 9.1 Technology of measurement and control in building systems TK 9.2 Building automation
Module's scope	- Measurement, control, adjustment and automation, measurements of temperature, pressure, torque, force, air, water, lighting, acceleration, speed, length and flow in building systems engineering, control chain, control loops and control loop elements, construction of control units and drives, control behavior (proportional, integral, differential), continuous and discontinuous regulators, examples of uses - Application areas and performance of building automation, functions of comfort and energy management of building automation, structure and application areas of centralized control systems (e.g. PLC), structure and application areas of decentralized control systems (e.g. EIB / KNX, LON, LCN, EnOcen, BacNet), smart control as a concept for building technology integration, computer applications for control and regulation technology, automation, remote control and monitoring of building equipment technology
Learning outcomes	Students should: - be able to apply the concepts and definitions of measurement and control technology in a professional manner and to select metrological procedures and methods adequate to a given situation, - be able to perform and evaluate measuring, control and regulatory tasks in building technology, - be able to assess the energy management functions of building automation and identify areas of application, - be able to assess and select metrological values and their obtaining by means of appropriate transducers and measurement sensors, as well as indicate areas of their application, - be able to identify different electrical actuators and switching actuators (actuation devices), - be able to explain the structure and operation of the control and regulation systems and illustrate them by means of an application example, - be able to distinguish between continuous and discontinuous control behavior and to demonstrate the relevant control loop behavior (PID) on the basis of diagrams and explain it on the basis of practical applications, - be able to explain building automation functions and highlight their potential for savings and cost-effectiveness, - be able to explain the concept of "Smart Control" and base recommendations for technical building automation on it.

Academic year (SJ)	4
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175
Module type (obligatory,	Obligatory module
Module's applicability	Basic module involving technical topics, which belongs to the group of engineering and scientific modules and provides basis for the following modules: TS 3, TPR 1 - TPR 4.
Requirements for participation	Participation in module classes - TK 1 Basics of technical building systems I - TK 5 Building systems as technical and functional systems I
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	F. Fasold
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.8 % (7/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during apprenticeship, guest lectures,	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Zacher, S./ Reuter, M.(2014): Regelungstechnik für Ingenieure, 14. Auflage, Verlag Springer Viehweg, Wiesbaden, - Hessel, Volker (2008): Energiemanagement. Maßnahmen zur Verbrauchs- und Kostenreduzierung, Förderprogramme, Vorschriften. Erlangen: Publicis Publ. - Merz, Hermann; Hansemann, Thomas; Hübner, Christof (2007): Gebäudeautomation. Kommunikationssysteme mit EIB/KNX, LON und BACnet. Recommended additional reading - Gröger, A. (2012): Energiemanagement und Energieeffizienz mit Gebäudeautomationssystemen. 2., neu bearb. Aufl. (2012). Renningen: expert. - Karg, Eduard (1992): Regelungstechnik. Elementare Grundlagen. 7., überarb. Aufl. Würzburg: Vogel (Kamprath-Reihe). - Gevatter, Hans-Jürgen; Grünhaupt, Ulrich (2006): Handbuch der Mess- und Automatisierungstechnik. (VDI-Buch). - Harke, Werner (2007): Smart (home) control. Mehrfachnutzung vorhandener Haustechniken im Bestand. Heidelberg: Müller.

D. Technical specialization modules (projects)

Module No./Code	TS 1
Module name	**Project: Photovoltaic installation (PV)**
If necessary, classes as part of module	TS 1.1: Photovoltaic installation (PV)
Module's scope	- Object-oriented planning, software dimensioning of modules, inverters, protective lines and devices and methods of inversion and MPP control, - Cost-benefit analysis and profit-and-loss analysis (profitability calculation), - Practical research laboratory "Photovoltaic" (performance measurements, determination of performance in an external test), - Planning of a photovoltaic system (shading analysis and arrangement of photovoltaic systems), preparation of a work plan and schedule for installation of a photovoltaic system, certificates and requirements on site, installation procedures of photovoltaic systems, construction schedule, list of works and tender calculation, start-up, - Maintenance and service contracts, electrical installation of a photovoltaic system, including devices calculating and measuring the electricity supply, - PV plant start-up (reduced efficiency, error sources and recording of operating data), system warranty and insurance
Learning outcomes	Students should: - be able to illustrate and assess schematically the structure of PV systems connected to the network and those operating independently of the network, - select ways and methods of operation of the voltage converter and MPP regulation for individual applications and evaluate them from the energy point of view, - be able to dimension a photovoltaic installation and determine the performance of a photovoltaic installation using software and assess the factors that influence it, - be able to set a guaranteed tariff for a photovoltaic installation using software and carry out a long-term cost-benefit analysis, - be able to specify permits and requirements necessary for the construction of an installation and obtain them, - be able to select and evaluate counting, measuring and protection devices, as well as surge protection and lightning protection measures, - be able to present performance forecasts based on software in the course of providing consulting services to clients, - be able to plan the work, time and materials required to install a PV system, - be able to calculate and create a list of works, - be able to install PV systems, - be able to record and evaluate the performance data of PV

Academic year (SJ)	4
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Obligatory module
Module's applicability	---
Requirements for participation	Participation in module classes - TK 1 Basics of technical building systems I - TK 4 Renewable energy sources and systems
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	F. Fasold
Course language	German
Exam type / requirements for awarding academic achievement	Documentation and presentation with an expert discussion
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Project work, practical classes, practical research laboratory, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Schröder,W. (2015): Inspektion, Prüfung und Instandhaltung von Photovoltaicanlagen, Fraunhofer IRB-Verlag, Stuttgart - Brück, Jürgen (2008): Photovoltaikanlagen professionell planen und installieren. Poing: Franzis. - Haselhuhn, Ralf; Hemmerle, Claudia; Hartmann, Uwe (2008): Photovoltaische Anlagen. 3. Aufl., Nachdr. überarb. Berlin: DGS Berlin. Recommended additional reading - Antony, Falk; Dürschner, Christian; Remmers, Karl-Heinz (2009): Photovoltaik für Profis. Verkauf, Planung und Montage von Solarstromanlagen. 2., vollst. überarb. Aufl. Erlangen: Solarpraxis; Verl. Solare Zukunft - Hanus, Bo (2009): Solar-Dachanlagen. Fehler finden und beheben; Poing: Franzis

Module No./Code	TS 2
Module name	**Project: Solar-thermal installation**
If necessary, classes as part of module	TS 2.1 Solar-thermal installation
Module's scope	- Areas of application for solar thermal systems (e.g. water heating, assisted heating, pool heating, heat storage for seasonal applications, solar cooling), - Technical integration of solar thermal installations in buildings (variants of hydraulic and electrical installations), components of solar installations and their characteristics, - Practical research laboratory "Solar energy" (measurement of thermal efficiency, installation efficiency and solar energy yield), - Planning, dimensioning and installation of a solar system and related documentation in accordance with customer requirements, performance forecasts using software, economic efficiency and ecological balance calculations, standards, regulations and guidelines for the operation of solar systems (e.g. EnEV, EEG, EEWärmeG), financing options and support programs, construction schedule, work schedule and offer costing, start-up, maintenance and service contracts, metrological and operational data evaluation.
Learning outcomes	Students should: - be able to record the customer's requirements regarding the use of solar energy during consultation and present the customer with suitable solutions suggestions, - be able to assess the types of systems and areas of application of solar thermal systems and make judgements about their economic efficiency, - be able to design components for solar thermal systems and calculate quantitative parameters regarding the size or capacity of an installation taking into account the market offer, - be able to define technical and interdisciplinary measures for plant planning in accordance with legal requirements (e.g. EEWärmeG, EEG, EneV) - be able to dimension installations according to standard and degree of coverage, collector surface and heat accumulator, - be able to use nomograms and computer programs to dimension installations, - be able to integrate a solar thermal system into existing technical building equipment (system integration planning), start it up and prepare documentation, - be able to estimate costs, financing options and financing schemes for solar thermal installations and incorporate them into consulting concepts, - be able to carry out economic and environmental assessments of solar thermal installations, - be able to monitor the operation of a solar thermal system and determine the operating data using measurement

Academic year (SJ)	4
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory, optional,	Obligatory module
Module's applicability	---
Requirements for participation	Participation in module classes - TK 2 Basics of technical building systems II - TK 4 Renewable energy sources and systems - TK 6 Building systems as technical and functional systems II
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	Prof. E. P. Schradieck
Course language	German
Exam type / requirements for awarding academic achievement	Documentation and presentation with an expert discussion
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Project work, practical classes, practical research laboratory, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Hanus, Bo (2009): Thermische Solaranlagen: planen und installieren Franzis Verlag Poing - Kasper, B.-R; Heidler, K (2008): Solarthermische Anlagen. [Leitfaden für das SHK-, Elektro- und Dachdeckerhandwerk, für Fachplaner, Architekten, Bauherren und Weiterbildungs-institutionen]. 8. Aufl., überarb. Neuaufl. Frankfurt, Main - Späte, Frank; Ladener, Heinz; Bollin, Elmar (2008): Solaranlagen. Handbuch der thermischen Solarenergienutzung. 10., verb. und erw. Aufl. Staufen bei Freiburg Recommended additional reading - Weyres-Borchert,B/ Kasper, B.-R.(2015): Solare Wärme, Technik, Planung, Hausanlage, Fraunhofer IRB-Verlag, Stuttgart - Schreier, Norbert (2008): Solarwärme optimal nutzen. Handbuch für Technik, Planung und Montage. 20. Aufl. Cölbe: Wagner & Co Solartechnik. - EN 12975, Kollektoren, T 1:Allgemeine Anforderungen, Teil 2: Prüfverfahren, Beuth-Verlag, Berlin - EN 12976, Vorgefertigte Anlagen, T1: Allgemeine Anforderungen , T 2: Prüfverfahren, Beuth_Verlag, Berlin - EN 12977, Kundenspezifisch gefertigte Anlagen, T1: Allgemeine Anforderungen, T2: Prüfverfahren, T3: Leistungsprüfung von Warmwasserspeichern für Solaranlagen, Beuth-Verlag, Berlin

Module No./Code	TS 3
Module name	**Project: Building system technology**
If necessary, classes as part of module	TS 3.1 Building system technology
Module's scope	- Sensors and actuators for building system technology, installation and configuration of software tools, implementation of configuration software, cost-benefit evaluation (classic electrical installation compared to building management system technology), - Planning the project of creating a building technology system, selection and installation of network voltage and bus cables, sensors and actuators, as well as system devices, lightning protection and overvoltage protection installations, programming and starting the system, fault diagnostics and removal, construction schedule, lists of works and offer calculation, start-up, maintenance and service contracts, acquisition and evaluation of metrological operating data, technical documentation, extension and adjustment of the installation's functions.
Learning outcomes	Students should: - be able to implement building automation methods based on building systems technology, - be able to create specification of essential terms and conditions of an order and a list of instructions, taking into account the needs of the customer, - be able to select components taking into account economic efficiency, - be able to configure and use the software for planning, configuring, programming, launching and documentation of installations, - be able to select sensors and actuators and place them within the installation in a logical manner, - be able to define bus devices and network topologies and select the appropriate components, - be able to simulate and test control tasks and logical connections of building technologies in a test configuration, - be able to create instruction lists and logical connections, - be able to create wiring diagrams and logical circuits, - be able to analyze installations using measurement technology, identify and correct errors, - be able to present, explain and document a fully operational installation.
Academic year (SJ)	4
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5

Total hours	125
Module type (obligatory,	Obligatory module
Module's applicability	---
Requirements for participation	Participation in module classes - TK 1 Basics of technical building systems I - TK 5 Building systems as technical and functional systems I
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	Prof. E. P. Schradieck
Course language	German
Exam type / requirements for awarding academic achievement	Documentation and presentation with an expert discussion
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Bernstein, Herbert (2006): Gebäudesystemtechnik mit dem europäischen Installationsbus (EIB/KNX). Hard- und Software für die intelligente Elektroinstallation ; mit zwei CD-ROM ; [mit Lernprogramm auf CD]. Berlin: VDE-Verl. - Frank, Karlheinz (2009): EIB/KNX. Grundlagen Gebäudesystemtechnik ; [mit DVD]. 4., aktualisierte Aufl. Berlin: Huss (Elektropraktiker-Bibliothek). - ZVEI – Zentralverband Elektrotechnik- und Elektronikindustrie e.V. (2006): Handbuch Haus- und Gebäudesystemtechnik Grundlagen. 5. überarbeitete Auflage. Diegem Belgium. Recommended additional reading - Merz, Hermann; Hansemann, Thomas; Hübner, Christof (2007): Gebäudeautomation. Kommunikationssysteme mit EIB/KNX, LON und BACnet. - Meyer, Willi (2007): KNX/EIB engineering tool software. Das Praxisbuch für ETS 3 Starter, ETS 3 Professional, ETS 2. 3., bearb. u. erw. Aufl. München: Hüthig und Pflaum.

Module No./Code	TS 4
Module name	**Project: Multifunctional production processes**
If necessary, classes as part of module	TS 4.1: Multifunctional production processes
Module's scope	- Combustion processes and thermodynamics of local CHP plant and fuel cells, areas of application and construction types, efficiency levels, utilization levels and dynamic behavior, types and characteristics of CHP, legal regulations, directives and normative requirements, - Dimensioning / design of local CHP plants and fuel cells, control variants and measures to optimize the operation of local CHP plants and fuel cells, exhaust systems of local CHP plants and fuel cells, hydraulic integration, integration in existing installations, buffer storage and fuel supply, - Construction schedule planning, works list and quotation calculation, start-up, maintenance and service contracts, technical documentation, measurement data acquisition and maintenance of local CHP plants and fuel cells, potential for savings and support measures, economic considerations, error analysis and troubleshooting
Learning outcomes	Students should: - be able to describe the operation of an installation and present it in a schematic manner, - be able to assess different areas of application and technological variants of local CHP plants and fuel cells, - be able to calculate and evaluate fuel supply and hydraulic integration of local CHP plants and fuel cells, - be able to select the appropriate type of local CHP plant and fuel cell according to customer requirements, dimension and plan the installation and present it in a schematic diagram, - be able to calculate energy and cost savings with software support, select support measures and use them to provide advice to customers, - be able to calculate and explain the degree of efficiency and dynamic behavior of a local CHP plant and fuel cell, - be able to plan the required exhaust systems, - be able to run a local CHP plant and fuel cells to calculate and analyze operating data using measurement
Academic year (SJ)	4
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5

Total hours	125
Module type (obligatory,	Obligatory module
Module's applicability	---
Requirements for participation	Participation in module classes - TK 1 Basics of technical building systems I - TK 6 Building systems as technical and functional systems II - TK 8 Processing, distribution and automation of energy in building system technology
Person responsible for the module	Prof. E. P. Schradieck
Name(s) of the teacher(s)	Prof. E. P. Schradieck
Course language	German
Exam type / requirements for awarding academic achievement	Documentation and presentation with an expert discussion
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Suttor, Wolfgang; Johler, Matthias; Weisenberger, Dietmar (2009): Das Mini-Blockheizkraftwerk; mit neuen Gesetzen und Fördermaßnahmen; 5. überarbeitete und erweiterte Auflage, Heidelberg: Müller - Schaumann, Gunter; Schmitz, Karl W. (2009):Kraft-Wärme-Kopplung 4.., vollst. bearb. u. erw. Auflage, Berlin, Springer Berlin (VDI-Buch) - Töpler, Johann; Lehmann, Jochen, (2014): Wasserstoff und Brennstoffzelle, Technologien und Marktperspektiven, Berlin-Heidelberg, Springer-Vieweg-Verlag, Berlin-Heidelberg Recommended additional reading - DIN V 18599, Teil 9 (2012), End- und Primärenergiebedarf von stromproduzierenden Anlagen, Beuth-Verlag, Berlin - Brennstoffzellen und Mikro-KWK, Band 20, Entwicklungen, Akteure, Zukunftsaussichten, ASUE e.V. - KWK-Ausbau, Entwicklung, Prognose, Wirksamkeit , Umweltbundesamt, 2014 - Thomas, Bernd (2007): Mini-Blockheizkraftwerke, Grundlagen, Gerätetechnik, Betriebssdaten; 1. Aufl. Würzburg: Vogel. - VDI 4655, (2008): Referenzlastprofile von Ein- und Mehrfamilienhäusern für den Einsatz von KWK-Anlagen, Beuth-Verlag, Berlin - VDI 4656 (2012, Planung und Dimensionierung von Mikro-KWK-Anlagen, Beuth-Verlag, Berlin

E. Specialization modules regarding management[1]

Module No./Code	TMS 1
Module name	**Business plan**
If necessary, classes as part of module	TMS 1.1 Business plan
Module's scope	business plan, business model, market analysis, marketing planning, financing planning
Learning outcomes	Students should: - perceive the business plan as a comprehensive tool to prepare the establishment or expansion of a company, - be able to describe and analyze aspects of strategic actions of competitors, - be able to develop and present a business plan, - be able to present and evaluate the advantages and disadvantages of using business plans.
Academic year (SJ)	3
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Elective module
Module's applicability	Basic module involving management topics, which belongs to the group of modules regarding economics, law and social studies, and provides basis for the following modules: TPR 3, TPR 4 In terms of form and duration this module corresponds to the BM 22 module in the Enterprise management in the SMEs sector course
Requirements for participation	Participation in module classes - TM 1 Introduction to Business Operations and general economics - TM 2 Management of strategic processes - TM 3 Investments and financing - TM 4 Marketing
Person responsible for the module	Prof. Dr. J. Richard

[1] This is 1 of the 3 modules offered, depending on the professional orientation of the apprenticeship company and the individual interests of the student.

Name(s) of the teacher(s)	Prof. Dr. J. Richard
Course language	German
Exam type / requirements for awarding academic achievement	Presentation with expert interview
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during apprenticeship, guest lectures,	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Fischl B./Wagner S.: Der perfekte Business Plan, 2. Aufl., München 2011 - Nagl , A., Der Businessplan: Geschäftspläne professionell erstellen Mit Checklisten und Fallbeispielen, 7. Auflage, Wiesbaden 2013 - Vogelsang, E./Fink, C./Baumann, M.: Existenzgründung und Businessplan, Berlin 2015 - Wirtz, B. W. Business Model Management, 3. Aufl., Wiesbaden 2013 Recommended additional reading - BMWI (2014), Starthilfe, Berlin (Download: http://www.bmwi.de/Dateien/BMWi/PDF/foerderdatenbank/br-starthilfe,property=pdf,bereich=bmwi,sprache=de,rwb=true.pdf) - Schwetje G. / Vaseghi S.: Der Businessplan: Wie Sie Kapitalgeber überzeugen. 2. Aufl., Berlin, Heidelberg 2005

Module No./Code	TMS 2
Module name	**Simulations**
If necessary, classes as part of module	TMS 2.1 Simulations
Module's scope	- Planning and obtaining orders in the decision-making area: Pricing, advertising, participation in tenders, - Planning and acquisition of resources in the decision-making area: Demand planning, purchase of materials, investment in machinery and equipment, recruitment and dismissal of personnel, - Planning and acquisition of resources in the area of finance: Financial requirements, short, medium and long-term financing based on foreign capital, - Planning and acquisition of resources in the area of innovation: Expansion of the company's area of activity - Business data analysis, key data analysis
Learning outcomes	Students should: - be able to identify and analyze the impact of key economic conditions on the success of an enterprise, - be able to set objectives and strategies and their implementation in a dynamic environment, - understand the principles of enterprise operation as a holistic issue, taking into account the business context, - be able to analyze the basic situation of the company on the basis of business data, make decisions and take entrepreneurial actions, - be able to cope with complex decision-making situations in conditions of uncertainty, - be able to prepare and apply thinking and action that goes beyond one specific area of activity, - be able to structure and solve problems connected with running a business.
Academic year (SJ)	3
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125
Module type (obligatory,	Elective module
Module's applicability	----

Requirements for participation	Participation in module classes - TM 1 Introduction to Business Operations and general economics - TM 2 Management of strategic processes - TM 3 Investments and financing - TM 4 Marketing
Person responsible for the module	Prof. Dr. J. von Kiedrowski
Name(s) of the teacher(s)	Prof. Dr. J. von Kiedrowski
Course language	German
Exam type / requirements for awarding academic achievement	Presentation with expert interview
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during apprenticeship, guest lectures,	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Vahs, D. / Schäfer-Kunz, J.: Einführung in die Betriebswirtschaftslehre, 7. Aufl., Stuttgart 2015 - Olfert, K.: Kostenrechnung. 17., verb. u. aktual. Aufl., Ludwigshafen 2013 Recommended additional reading - Zantow, R./Dinauer J.: Finanzwirtschaft des Unternehmens: Die Grundlagen des modernen Finanzmanagements. 3., aktualisierte Aufl., München 2011

Module No./Code	TMS 3
Module name	**Staff development and trainers' qualifications**
If necessary, classes as part of module	TMS 3.1 Staff development TMS 3.2 Qualifications of trainers
Module's scope	- Basics of personnel development (concept, tasks and objectives), needs analysis, objective definition, planning, implementation of personnel development, transfer, controlling, challenges - Verification of training requirements; planning and preparation of training, planning and employment of trainees; carrying out training, selection and application of training methods and media, using educational assistance and promoting the development of outstanding trainees; developing learning and teamwork, performance appraisals; ending education
Learning outcomes	Students should: - be able to describe and evaluate tasks and objectives as well as the content and instruments of staff development, - be able to identify and apply procedures for identifying staff development needs, - be able to analyze and assess the needs for staff development in the enterprise and apply appropriate measures on that basis, - be able to present different activities and methods of qualification and select them according to the needs and target groups, - be able to identify and assess the impact of staff development activities, - reflect on the economic, social and legal framework conditions for training, - be able to demonstrate and implement a systematic approach to training planning, - be able to prepare training and employ interns, - be able to analyze workplace training and select appropriate training tools, - be able to promote learning among trainees, taking into account individual learning conditions and team processes, - be able to assess the company's performance and to finalise the training relationship accordingly.
Academic year (SJ)	3
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125

Module type (obligatory,	Elective module
Module's applicability	Basic module involving management topics, which belongs to the group of modules regarding economics, law and social studies, and provides basis for the following modules: TPR 3, TPR 4 In terms of form and duration this module corresponds to the BM 19.2 class in module BM 19 in the Business Administration in SMEs course
Requirements for participation	Participation in TM5 module classes: Human resources management
Person responsible for the module	Prof. Dr. U. Schaumann
Name(s) of the teacher(s)	Prof. Dr. U. Schaumann
Course language	German
Exam type / requirements for awarding academic achievement points	Written exam (180 min), a practical examination in the form of planning and carrying out a training situation, and an expert discussion
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: - Bröckermann, R./Müller-Vorbrüggen, M. (Hrsg.): Handbuch Personalentwicklung – Die Praxis der Personalbildung, Personalförderung und Arbeitsstrukturierung. 2., überarbeitete und erweiterte Auflage, Stuttgart 2008 - Bourichter, W./Brand, U./Esser, F. u. a.: Sackmann - das Lehrbuch für die Meisterprüfung: Teil IV: Berufs- und Arbeitspädagogik, Ausbildung der Ausbilder nach AEVO, 40. Aufl., Düsseldorf 2010 Recommended additional reading - Becker, M.: Personalentwicklung – Bildung, Förderung und Organisationsentwicklung in Theorie und Praxis. 5., aktualisierte und erweiterte Auflage, Stuttgart 2009 - Thom, N./Zaugg, R. J. (Hrsg.): Moderne Personalentwicklung – Mitarbeiterpotenziale erkennen, entwickeln und fördern. 2., aktualisierte Auflage, Wiesbaden 2007 - Ryschka, J./Solga, M./Mattenklott (Hrsg.): Praxishandbuch Personalentwicklung – Instrumente, Konzepte, Beispiele. 3., vollständig überarbeitete und erweiterte Auflage, Wiesbaden 2011 - Semper, L./Gress, W./Franke, K.: Die Handwerkerfibel. Berufs- und Arbeitspädagogik. Band 3, 50. Aufl., München 2011

F. Reflections on

Module No./Code	TPR 1
Module name	**Reflections on practice 1 with focus on technology**
Module's classes	The classes on the basic technical modules of the first year of studies provide the basis for the selection of a suitable topic for reflections on technology or technology-oriented practice: TK 1 Basics of technical building systems I with classes: TK 1.1: Mathematical basics I TK 1.2: Electrical engineering TK 1.3: Measuring technology TK 2 Basics of technical building systems II with classes TK 2.1: Mathematical basics II TK 2.2: Thermodynamics and heat exchange TK 2.3: Calculating the heating load and the heating surface TK 4 Renewable energy sources and systems TK 4.1: Energy policy and energy law TK 4.2: Renewable energy sources and systems
Module's scope	Due to the conceptual orientation of the practical reflections module, the content of the module corresponds in principle to the technical activities of the basic technical modules (see above, modules TK1, 2 and 4) in relation to technical or technological matters involving the enterprise.
Learning outcomes	Students should: present technical tasks or a definition of a problem in the enterprise's practice, referring to selected topics from one or more basic technical modules (TK1, TK2, TK4). - - be able to use main framework conditions, in particular technical conditions, to analyze tasks or problems - be able to demonstrate, in specific cases, possible technical or other causes, - be able to present conclusions, in particular with regard to possible technical solutions, (A detailed technical subject of the reflections on practice is established on the basis of a task or problem together with the supervising teacher)
Academic year (SJ)	1
Module's duration	0.5 SJ

Module's availability	In each academic year
ECTS points awarded	7
Total hours	175
Module type (obligatory,	Obligatory module
Module's applicability	---
Requirements for participation	Participation in module classes TÜ 1 Scientific work and research methodology
Person responsible for the module	Prof. E. - P. Schradieck
Name(s) of the teacher(s)	Academic teachers who conduct individual classes (see above) within this technical module
Course language	German
Exam type / requirements for awarding academic achievement	Reflections on practice (about 12 A4 pages) and documentation if needed
Grade's contribution to the total grade	3.7 % (7/180)
Teaching and learning methods	Self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: Compare individual items from the list of compulsory technical readings from individual classes of this module (see above) Recommended additional reading See individual items from the list of additionally recommended technical readings from the individual classes of this module (see above)

Module No./Code	TPR 2
Module name	**Reflections on practice 2 with focus on management**
Module's classes	Classes on basic technical modules up to and including the second year of studies as a basis for the selection of a suitable topic for reflections on directed management practice: TM 1: Introduction to Business Operations and general economics TM 2: Management of strategic processes TM 3: Investments and financing TM 4: Marketing *(Tip: If necessary, students wishing to create a management-oriented reflection on practice regarding another TM 5-8 module as another practice reflection will receive additional support and on-demand assistance).*
Module's scope	Due to the conceptual orientation of the practical reflection module, the content of the module corresponds in principle to the activities of the basic management modules (see above, modules TM 1 - 4) in relation to tasks or problems involving the enterprise. It may be necessary to take into account the technical aspects which may affect the suggested solutions which make up the framework conditions.
Learning outcomes	Students should: present technical tasks or a definition of a problem in a company's practice, referring to selected complex issues concerning company management from one or more basic technical modules (TM 1 - TM 4), - - be able to use main framework conditions, in particular technical conditions and those relating to business management, to analyze problems - be able to demonstrate possible causes, in particular those of a managerial nature and possible other causes, - be able to present conclusions, particularly with regard to possible business management solutions, (The specific topic of reflection on practice on the company management is determined together with the supervising teacher on the basis of a task or topic.)
Academic year (SJ)	2
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7

Total hours	175
Module type (obligatory,	Obligatory module
Module's applicability	---
Requirements for participation	Participation in module classes TÜ 1 Scientific work and research methodology
Person responsible for the module	Prof. Dr. J. von Kiedrowski or Prof. Dr. J. Richard or Prof. Dr. F. Bönte
Name(s) of the teacher(s)	Academic teachers who conduct individual classes (see above) within this management module
Course language	German
Exam type / requirements for awarding academic achievement	Reflections on practice (about 12 A4 pages)
Grade's contribution to the total grade	3.7 % (7/180)
Teaching and learning methods	Self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: See individual items from the list of obligatory management readings from individual classes of this module (see above) Recommended additional reading See individual items from the list of additionally recommended management readings from individual classes of this module (see above)

Module No./Code	TPR 3
Module name	**Reflections on practice 3 with focus on technology**
Module's classes	In addition to the basic technical module classes completed by the end of the first year of studies: TK 1, TK 2 and TK 4 classes on the basic technical modules of the second and third year of studies form the basis for the selection of a suitable topic for technical practice reflection. TK 3 Basics of technical building systems III TK 3.1 Mathematical basics III TK 3.2 Building construction and building physics TK 3.3 Calculating the heating load and the heating surface TK 5 Building systems as technical and functional systems I TK 5.1 Information technology TK 5.2 Lighting technology TK 6 Building systems as technical and functional systems II TK 6.1 Industrial installation technology TK 6.2 Installation planning TK 7 Energy efficiency and thermal insulation in buildings TK 7.1 Basics of energy efficiency and thermal protection in buildings TK 7.2 Economic efficiency of renovation works carried out in buildings TK 8 Processing, distribution and use of energy TK 8.1 Processing and distribution of energy TK 8.2 Energy use
Module's scope	Due to the conceptual orientation of the reflections on practice module, the content of the module corresponds in principle to the technical activities of the basic technical modules (see above) in relation to technical or technological issues involving the enterprise.
Learning outcomes	Students should: present technical tasks or the definition of a problem in the company's practice, referring to selected thematic issues from one or more basic technical modules (TK 1 - TK 8),

	- be able to analyze and distinguish basic, and in particular technical, framework conditions for the formulation of tasks or problems, using engineering methods, procedures and instruments, - be able to demonstrate, in specific cases, possible technical or other causes, - be able to identify suitable technical solutions and, if necessary, alternative solutions (A detailed technical subject of the reflections on practice is established on the basis of a task or problem together with the supervising teacher)
Academic year (SJ)	3
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175
Module type (obligatory,	Obligatory module
Module's applicability	---
Requirements for participation	Participation in module classes TÜ 1 Scientific work and research methodology
Person responsible for the module	Prof. E. - P. Schradieck
Name(s) of the teacher(s)	Academic teachers who conduct individual classes (see above) within this technical module
Course language	German
Exam type / requirements for awarding academic achievement	Reflections on practice (about 12 A4 pages) and documentation if needed
Grade's contribution to the total grade	3.7 % (7/180)
Teaching and learning methods	Self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: Compare individual items from the list of compulsory technical readings from individual classes of this module (see above) Recommended additional reading See individual items from the list of additionally recommended technical readings from the individual classes

Module No./Code	TPR 4
Module name	**Reflections on practice 4 with focus on technology**
Module's classes	In addition to the basic technical modules completed by the end of the third year of studies: TK 1, TK 8 The following activities form the basis for the selection of a suitable topic for reflections on technology-oriented practice: TK 9 Measurement, monitoring, regulation and automation building system technology TK 9.1 Technology of measurement and control in building systems TK 9.2 Building automation
Module's scope	Due to the conceptual orientation of the reflections on practice module, the content of the module corresponds in principle to the technical activities of the basic technical modules (see above) in relation to technical or technological issues involving the enterprise.
Learning outcomes	Students should: present technical tasks or a definition of a problem in a company's practice, referring to selected complex subject areas from one or more basic technical modules (TK 1, TK 9). - - be able to analyze and distinguish basic, and in particular technical, framework conditions for the formulation of tasks or problems, using engineering methods, procedures and instruments, - be able to demonstrate, in specific cases, possible technical or other causes, - be able to identify suitable technical solutions and, if necessary, alternative solutions (A detailed technical subject of the reflections on practice is established on the basis of a task or problem together with the supervising teacher)
Academic year (SJ)	4
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175

Module type (obligatory,	Obligatory module
Module's applicability	---
Requirements for participation	Participation in module classes TÜ 1 Scientific work and research methodology
Person responsible for the module	Prof. E. - P. Schradieck
Name(s) of the teacher(s)	Academic teachers who conduct individual classes (see above) within this technical module
Course language	German
Exam type / requirements for awarding academic achievement	Reflections on practice (about 12 A4 pages) and documentation if needed
Grade's contribution to the total grade	3.7 % (7/180)
Teaching and learning methods	Self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: Compare individual items from the list of compulsory technical readings from individual classes of this module (see above) Recommended additional reading See individual items from the list of additionally recommended technical readings from the individual classes

G. Bachelor's

Module No./Code	**TBA**
Module name	**Bachelor's thesis**
Module's classes	In principle, the bachelor's thesis can apply to all activities offered in all modules. The emphasis, however, is on the technical modules of the field of study. For this reason, it is important to focus on one or more technical courses when working on a bachelor's thesis.
Module's scope	Processing of application-oriented and mainly technical or technological tasks or problems in the field of energy technology for buildings using engineering methods, procedures and instruments. It may be necessary to take into account the economic, economic and environmental aspects which may affect the solutions as general conditions. Topics relating exclusively to business economics and ecology are not allowed. (The specific content is determined by a question which is established on the basis of a problem relating to the management of the enterprise with the assistance of a teacher).
Learning outcomes	Students should: be able to independently develop, identify and analyze a technical problem or an application-oriented task, using engineering methods, procedures and instruments within the planned time frame, and develop solutions to the problem, taking into account the knowledge gained during the course of study. (The detailed topic of the bachelor's thesis is established on the basis of a task or problem together with a supervising teacher.)
Academic year (SJ)	4
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	10
Total hours	250
Module type (obligatory,	Obligatory module
Module's applicability	---
Requirements for participation	Completion of all examinations up to and including the third academic year.

Person responsible for the module	Prof. E. - P. Schradieck
Name(s) of the teacher(s)	Supervisor responsible for the relevant technical activities of this module
Course language	German
Exam type / requirements for awarding academic achievement points	Bachelor's thesis in accordance with typical scientific standards for scientific work. Approximately 45 A4 pages (without attachments).
Grade's contribution to the total grade	5.55 % (10/180)
Teaching and learning methods	Self-study
Special information (e.g. online classes, visits during	- none -
Literature (Obligatory reading/recommended additional literature)	Obligatory reading: Compare individual items from the list of compulsory technical readings from individual classes or modules within the course of study. Recommended additional reading Compare individual items from the list of additionally recommended technical readings from individual classes in this field of study.

Result 5.1

Dual Bachelor's Degree Programs

Modul Manual "Business Administration for SMEs"

Prepared by:

Berufsakademie Hamburg

Module No.	Module / Study unit	Credit Points (CP) Academic year				Total		Total Hours	Examination results (Exam type as well as duration in minutes)	Sum CP
		1.	2.	3.	4.	Hours Full-time course	Hours Self-studies			
Interdisciplinary modules										
BWÜ 1	**Scientific work and research methodology**	**6**				**48**	**102**	**150**		**6**
BWÜ 1.1	Scientific work					24	51		Written exam (120 min)	
BWÜ 1.2	Research methodology and statistics					24	51			
BWÜ 2	**Business English**	**6**				**64**	**86**	**150**		**6**
BWÜ 2.1	Business English					64	86		Written exam (90 min) and oral exam (20 min)	
BWÜ 3	**Basics of communication and consulting**		**6**			**52**	**98**	**150**		**6**
BWÜ 3.1	Basics of communication and consulting					32	60		Written exam (120 min)	
BWÜ 3.2	Presentation					20	38			
BWÜ 4	**Project management**			**5**		**46**	**79**	**125**		**5**
BWÜ 4.1	Basics of project management					46	79		Written exam (120 min)	
Core modules										
BWM 5	**Basics of general economics**	**5**				**46**	**79**	**125**		**5**
BWM 5.1	Basics of general economics					46	79		Written exam (120 min)	
BWM 6	**Basics of business economics I**	**5**				**46**	**79**	**125**		**5**
BWM 6.1	Basics of business economics I					46	79		Written exam (120 min)	
BWM 7	**Basics of business economics II**	**5**				**46**	**79**	**125**		
BWM 7.1	Basics of business economics II					46	79		Written exam (120 min)	
BWM 8	**Human resources management**	**7**				**72**	**103**	**175**		**7**
BWM 8.1	Human resources management in SMEs					38	54		Written exam (120 min)	
BWM 8.2	Human resources management					34	49			
BWM 9	**Marketing**	**6**				**58**	**92**	**150**		**6**
BWM 9.1	Basics of marketing					16	26		Written exam (120 min)	
BWM 9.2	Marketing instruments in SMEs					42	66			
BWM 10	**External accounting**		**7**			**62**	**113**	**175**		**7**
BWM 10.1	Accounting					24	43		Written exam (120 min)	
BWM 10.2	Annual financial statement, income statement, and					38	70			
BWM 11	**Investments and financing in SMEs**		**6**			**58**	**92**	**150**		**6**
BWM 11.1	Investments					20	34		Written exam (120 min)	
BWM 11.2	Financing					38	69			
BWM 12	**Knowledge management in SMEs**		**6**			**52**	**98**	**150**		**6**
BWM 12.1	Knowledge management in SMEs					52	98		Written exam (120 min)	
BWM 13	**Basics of commercial law and labor law**		**6**			**58**	**92**	**150**		**6**
BWM 13.1	Basics of business law					30	48		Written exam (120 min)	
BWM 13.2	Labor law and social insurance law					28	44			
BWM 14	**Internal accounting and taxation in business economics**		**7**			**62**	**113**	**175**		**7**
BWM 14.1	Cost and result account					38	70		Written exam (120 min)	
BWM 14.2	Basics of taxation in business economics					24	43			
BWM 15	**Materials management**			**6**		**52**	**98**	**150**		**6**
BWM 15.1	Basics of materials management and supply					32	53		Written exam (120 min)	
BWM 15.2	Basics of warehouse management					20	45			

Module No.	Module / Study unit	Credit Points (CP) Academic year				Total		Total Hours	Examination results (Exam type as well as duration in minutes)	Sum CP
		1.	2.	3.	4.	Hours Full-time course	Hours Self-study			
BWM 16	**Organization and change management**			**7**		**62**	**113**	**175**		**7**
BWM 16.1	Basics of organizational theory and organizational development					28	51		Written exam (120 min)	
BWM 16.2	Change Management in SMEs					34	62			
BWM 17	**Controlling I**			**6**		**52**	**98**	**150**		**6**
BWM 17.1	Strategic controlling in SMEs					32	60		Written exam (120 min)	
BWM 17.2	Basics of risk management in SMEs					20	38			
BWM 18	**Controlling II**				**6**	**52**	**98**	**150**		**6**
BWM 18.1	Principles of operational planning at the company level					16	28		Written exam (120 min)	
BWM 18.2	Operational controlling in SMEs					36	70			
BWM 19	**Staff development in SMEs**				**6**	**48**	**102**	**150**		**6**
BWM 19.1	Staff development in SMEs					48	102		Written exam (120 min)	
BWM 20	**Qualifications of trainers in SMEs**				**7**	**72**	**103**	**175**		**7**
BWM 20.1	Qualifications of trainers in SMEs					72	103		Written exam (180 min) practical examination (30 min)	
Elective modules (two out of five)										
BWM 21	**Innovation management in SMEs**			**6**		**52**	**98**	**150**		**6**
BWM 21.1	Basics of innovation management					32	60		Presentation and expert discussion (30 min)	
BWM 21.2	Creating process, product, and service innovations in SMEs					20	38			
BWM 22	**Entrepreneurship**			**6**		**52**	**98**	**150**		**6**
BWM 22.1	Enterprise ethics					16	30		Presentation and expert discussion (30 min)	
BWM 22.2	Establishment and succession of an enterprise					36	68			
BWM 23	**Business English (intensification)**			**6**		**52**	**98**	**150**		**6**
BWM 23.1	Business English (intensification)					52	98		Written exam (90 min) and oral exam (20 min)	
BWM 24	**Introduction to business computing**				**6**	**52**	**98**	**150**		**6**
BWM 24.1	Introduction to business computing					28	53		Portfolio with presentation	
BWM 24.2	Digitization of business processes					24	45			
BWM 25	**Supply Chain Management**				**6**	**52**	**98**	**150**		**6**
BWM 25.1	Basics of supply chain management					28	53		Portfolio with an oral exam (20 min)	
BWM 25.2	Creating logistics processes					24	45			

Module No.	Module / Study unit	Credit Points (CP) Academic year				Total		Total Hours	Examination results (Exam type as well as duration in minutes)	Sum CP
		1.	2.	3.	4.	Hours Full-time course	Hours Self-study			
Practical modules						**Full-time course**	**Practice**			
BPR 26	**Reflections on practice 1**	5				4	121	125	Portfolio with an expert discussion (processing time up to 6 months)	**5**
BPR 27	**Reflections on practice 2**		7			4	171	175	Portfolio with presentation and an expert discussion (processing time up to 6 months)	**7**
BPR 28	**Reflections on practice 3**			8		4	196	200	Reflections on practice (processing time 8 weeks)	**8**
BPR 29	**Capstone project**			7		32	143	175	Portfolio with presentation and an expert discussion (processing time up to 6 months)	**7**
BPR 30	**Reflections on practice 4**				8	4	196	200	Reflections on practice (processing time 8 weeks)	**8**
Bachelor's thesis										
BWM 31	**Bachelor's thesis**				12			300	Bachelor's thesis (40-50 pages, processing time 12 weeks)	**12**
CP p.a.		**45**	**45**	**45**	**45**					
Total hours (contact studies and self-study)						**1260**	**2113**			
Total hours of practical elements (practice hours)								**827**		
Total hours of the bachelor's thesis								**300**		
Total hours of the course of study									**4500**	
Total CP of the course of study										**180**

Module's handbook Dual Bachelor of Business Administration SME (Bachelor of Arts)

(Version of: 13.08.2019)

Table of Contents

A. Interdisciplinary modules

Module No./Code	BWÜ 1
Module name	Scientific work and research methodology
If necessary, classes as part of module	BWÜ 1.1 Scientific work BWÜ 1.2 Research methodology and statistics
Module's scope	Scientific work • Time management, motivation, and concentration • Self-study during the course • Basics of knowledge acquisition • Basics of scientific work • Acquisition, analysis, and evaluation of information • Structure of scientific work • Formal requirements of scientific work Research methodology and statistics • Basics of empirical social research • Operationalization and measurement • Data acquisition techniques • Data evaluation and interpretation • Basic statistics
Learning outcomes	Students should: • know strategies for learning and working during the course and be able to define and apply them according to their own needs • know techniques of scientific work and be able to apply them in the context of their own study during the course • have the ability to critically reflect on the principles of scientific work and apply them when preparing their own studies (homework, reflections on practice, and bachelor's thesis) as part of the course • understand the basics of research methodology in the business context • be able to use and evaluate various survey instruments to identify problems that may occur in an enterprise • be able to design and conduct their own research
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (48 full-time course / 102 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	Due to the interdisciplinary nature of this module, it is required for basic and elective modules (BWM 5 – BWM 22), and especially for practical modules (BPR 23 – BPR 27), as well as for Bachelor's thesis BWM 31

	In general, in terms of form and time, this module is equivalent to module TÜ 1 in the major "Management of renewable energy technologies for buildings".
Requirements for participation	- none -
Person responsible for the module	Prof. Dr. J. von Kiedrowski, Prof. Dr. U. Schaumann
Name(s) of the teacher(s)	Prof. Dr. J. von Kiedrowski, Prof. Dr. U. Schaumann
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Kornmeier, M.: Wissenschaftstheorie und Wissenschaftliches Arbeiten: Eine Einführung für Wirtschaftswissenschaftler. Heidelberg • Atteslander, P.: Methoden der empirischen Sozialforschung. Berlin • Eisend, M./Kuß, A.: Grundlagen empirischer Forschung. Zur Methodologie in der Betriebswirtschaftslehre. Wiesbaden Recommended additional reading (current edition in each case): • Schnell, R./Hill, P. B./Esser, E.: Methoden der empirischen Sozialforschung. München • Flick, U./von Kardorff, E./Steinke, I. (Hrsg.): Qualitative Forschung. Reinbek • Schuster, T. / Liesen, A.: Statistik für Wirtschaftswissenschaftler: Ein Lehr- und Übungsbuch für das Bachelor-Studium. Berlin

Module No./Code	BWÜ 2
Module name	Business English
If necessary, classes as part of module	BWÜ 2.1 Business English
Module's scope	• Business or pleasure • Information Exchange • People Skills: Rapport • Management Scenario: Cultural Clash • Problems on the phone • Leading Meetings • People Skills: Coaching • Management Scenario: Coach Crash • Promoting your ideas • Relationship-Building
Learning outcomes	Students should: • be able to use basic vocabulary to describe their workplace • be able to describe and reflect on various situations in the enterprise and how they relate to specific applications • be able to present and discuss the challenges associated with making phone calls • be able to take the role of a meeting host • be able to promote and analyze their own ideas • be able to create and reflect on business relationships • be able to analyze and evaluate various
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (64 full-time course / 86 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	As an interdisciplinary module, it serves the acquisition of soft skills and helps in understanding English specialist texts during the course. The module is not included in other courses.
Requirements for participation	- none -
Person responsible for the module	Prof. Dr J. von Kiedrowski
Name(s) of the teacher(s)	Henning Prüß, currently no information available
Course language	English

Exam type / requirements for awarding academic achievement points	Written exam (90 min) and oral exam (20 min)
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Powell, M./Allison, J.: In Company 3.0 – Upper Intermediate Student's Book Pack (B2+). Macmillan Publishing. London Recommended additional reading (current edition in each case): • Schofield, J.: Double Dealing. Intermediate Business English Course. Summertown Publishing ltd. • Stock (Hrsg.): Business Spotlight. Englisch für den beruflichen Erfolg. Quarterly. München

Module No./Code	BWÜ 3
Module name	Communication and consultancy
If necessary, classes as part of module	BWÜ 3.1 Basics of communication and consulting BWÜ 3.2 Presentation
Module's scope	Basics of communication and consulting • Basics of communication and rhetoric • Creating various conversational situations • Basics of customer-oriented consulting • Basics of negotiation, Harvard Model • Special features of intercultural communication in a business context Presentation • Psychological basis of attention and perception • Planning, implementing, and evaluation of presentations in the context of an enterprise
Learning outcomes	Students should: • know the basics of communication and rhetoric and use them as a framework for reflection on discussions and consultancy offered in practice • analyze and interpret conversations in a holistic way • be able to provide consultancy in a communicative way • apply the basics of negotiations • take into account the importance of cultural identities and differences in the context of an enterprise • analyze and evaluate intercultural communication and interaction in an enterprise • prepare and give presentations independently • use presentation techniques and apply media in a targeted manner
Academic Year (SJ)	2. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory,	Obligatory module
Module's applicability	As an interdisciplinary module, it serves the acquisition of soft skills, which are to be used primarily in module BWÜ 4 (basics of project management) and to meet the requirements of the presentation exam in practical module BPR 26 (Capstone project). In general, in terms of form and time, this module is equivalent to module TÜ 3 on the major "Management of renewable energy technologies for buildings".

Requirements for participation	- none -
Person responsible for the module	Prof. Dr. U. Schaumann
Name(s) of the teacher(s)	M. Mazur
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Schulz v. Thun, F.: Miteinander reden, Bd. 1: Störungen und Klärungen, allgemeine Psychologie der Kommunikation. Reinbek • Stiller, M.: Kundenberatung im persönlichen Verkauf. Wiesbaden • Seifert, J. W.: Visualisieren, Präsentieren, Moderieren. Offenbach Recommended additional reading (current edition in each case): • Schulz v. Thun, F. u.a..: Miteinander reden. Kommunikationspsychologie für Führungskräfte. Reinbek • Fischer, R. u.a.: Das Harvard-Konzept. Sachgerecht verhandeln, erfolgreich verhandeln. Frankfurt • Ertelt, B.-J. / Schulz, W. E.: Handbuch Beratungskompetenz: Mit Übungen zur Entwicklung von Beratungsfertigkeiten in Bildung und Beruf. Wiesbaden • Lewicki, R. J. u.a.: Verhandeln mit Strategie. Das große Handbuch der Verhandlungstechniken. Zürich

Module No./Code	BWÜ 4
Module name	Basics of project management
If necessary, classes as part of module	BWÜ 4.1 Basics of project management
Module's scope	• Basics of project management • Project planning along with the planning of its structure, course, and schedule, resource planning and budgeting • Project management and control with task allocation
Learning outcomes	Students should: • know and use the methods of project planning, management, and control • be able to structure and plan business tasks as a project, • be able to identify, analyze, and evaluate problems when running project teams • use software support in project management • present project results
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125 (46 full-time course / 79 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	This is an interdisciplinary module, completion of which is a condition for entering practical module BPR 26 (Capstone project). The module is not included in other courses.
Requirements for participation	BWÜ 3
Person responsible for the module	Prof. Dr. U. Schaumann
Name(s) of the teacher(s)	M. Mazur
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -

Literature	Obligatory reading (latest edition in each case): • Mayrshofer, D./Kröger, H. A.: Prozesskompetenz in der Projektarbeit. Ein Handbuch mit vielen Praxisbeispielen für Projektleiter, Prozessbegleiter und Berater. Hamburg • Kraus, G./Westermann, R.: Projektmanagement mit System. Organisation, Methoden, Steuerung. Wiesbaden Recommended additional reading (current edition in each case): • Braehmer, U.: Projektmanagement für kleine und mittlere Unternehmen. Schnelle Resultate mit knappen

B. **Basic modules**

Module No./Code	BWM 5
Module name	Basics of general economics
If necessary, classes as part of module	BWM 5.1 Basics of general economics
Module's scope	• Basic concepts of general economics, methods, economic systems • Market behavior, adjustment processes, market failures • Full competition, price fixing, market power • Household behavior • State behavior and influence, macroeconomic goals • Economic policy instruments • Basic concepts related to environmental economics
Learning outcomes	Students should: • understand and conduct critical discussions about the role of enterprises, households, and the government in national economy • be able to describe the mechanism of the economic cycle • assess the consequences of market forms and price determinants in various industries • be able to analyze the emergence of various market situations • be able to analyze the strategic competitive behavior of competitors and demonstrate the consequences in individual industries • identify and critically analyze market failures and abuses • demonstrate the instruments of state economic policy and their impact on enterprises
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125 (46 full-time course / 79 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	- none -
Person responsible for the module	Prof. Dr J. von Kiedrowski

Name(s) of the teacher(s)	Dr. I. Drachenberg
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Baßeler, U./Heinrich, J./Utrecht, B.: Grundlagen und Prob- leme der Volkswirtschaft, Stuttgart • Engelkamp, P./Sell, F. L.: Einführung in die Volkswirt- schaftslehre. Berlin, Heidelberg, New York Recommended additional reading (current edition in each case): • Mankiw, N.G./Taylor, M.P.: Grundzüge der Volkswirtschafts- lehre. Stuttgart • Wiesemeth, H.: Umweltökonomie: Theorie und Praxis im Gleichgewicht. Berlin, Heidelberg, New York u. a.

Module No./Code	BWM 6
Module name	Basics of business economics I
If necessary, classes as part of module	BWM 6.1 Basics of business economics
Module's scope	• Basic concepts and subject of business economics • Basic functions of an enterprise • Basics of procurement, production, and sales • Basics of enterprise accounting and capital management
Learning outcomes	Students should: • understand the management of enterprises within the subject of enterprise economy, • be able to assess the quantitative and qualitative characteristics of SMEs • be able to analyze the basic functions of the business where the apprenticeship takes place • use accounting as an important source of information for business decisions • classify basic concepts and compare investment and financial planning instruments
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125 (46 full-time course / 79 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	Participation in this module is necessary to take part in basic module BWM 7. The module is not included in other courses.
Requirements for participation	- none -
Person responsible for the module	Prof. Dr J. von Kiedrowski
Name(s) of the teacher(s)	Prof. Dr J. von Kiedrowski
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Lectures, practical classes, self-study

Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Wöhe, G.: Einführung in die Allgemeine Betriebswirtschaftslehre. München: Verlag Franz Vahlen Recommended additional reading (current edition in each case): • Vahs, D. / Schäfer-Kunz, J.: Einführung in die Betriebswirtschaftslehre. Stuttgart • Thommen, J.-P./Achleitner, A.-K.: Allgemeine Betriebswirtschaftslehre. Wiesbaden

Module No./Code	BWM 7
Module name	Basics of business economics II
If necessary, classes as part of module	BWM 7.1 Basics of business economics II
Module's scope	• Enterprise and its surroundings • Basics of business management • Constitutive decisions • Basics of organization • Basics of human resource management • Basics of capital economy
Learning outcomes	Students should: • be able to distinguish and analyze groups of stakeholders and assess their impact on the operation of a company • be able to define, classify, and apply tasks related to company management at various levels • apply decision criteria when choosing a legal form and location • assess reasons for cooperation in the SME sector • distinguish between basic forms of structural and procedural organization • define basic concepts and evaluate human resource management instruments related to particular applications
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125 (46 full-time course / 79 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	Participation in module BWM 6
Person responsible for the module	Prof. Dr J. von Kiedrowski
Name(s) of the teacher(s)	Prof. Dr J. von Kiedrowski
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	2.7 % (5/180)

Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Vahs, D. / Schäfer-Kunz, J.: Einführung in die Betriebswirtschaftslehre. Stuttgart Recommended additional reading (current edition in each case): • Thommen, J.-P./Achleitner, A.-K.: Allgemeine Betriebswirtschaftslehre. Wiesbaden • Wöhe, G.: Einführung in die Allgemeine Betriebswirtschaftslehre. München: Verlag Franz Vahlen

Module No./Code	BWM 8
Module name	Basics of human resource management
If necessary, classes as part of module	BWM 8.1 Human resources management in SMEs BWM 8.2 Human resources management
Module's scope	Human resource management in SMEs • Tasks and goals of human resource management in SMEs • quantitative and qualitative planning of staff requirements • Recruitment methods and instruments • Personal marketing and Employer Branding in SMEs • Staff schedule planning tools • Creating jobs and salaries • Basics of personal controlling Human resources management • Tasks and goals of human resource management • Fundamentals and theories regarding research in the field of human resource management • Theories and concepts of leadership
Learning outcomes	Students should: • be able to present the basics of human resource management and assess their importance for SMEs • be able to describe and implement HR planning methods for SMEs • be able to compare internal and external recruitment methods and apply them to the challenges present in companies from the SME sector • be able to identify and critically assess the possibilities and limitations of personal marketing and Employer Branding for SMEs • be able to distinguish between instruments for scheduling work for staff • be able to demonstrate the importance of creating jobs and remunerations for SMEs • be able to present the basics of human resource management and provide a general outline of leadership studies and use their results in a company • be able to apply leadership techniques and tools in SMEs • be able to critically discuss motivational theories used to explain employee results/behavior • be able to analyze and evaluate employee behavior in operational situations based on motivational theories
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (72 full-time course / 103 self-study)
Module type (obligatory,	Obligatory module

Module's applicability	Participation in this module is necessary to take part in basic module BWM 18. In general, in terms of form and time, this module is equivalent to module TM5 on the major "Management of renewable energy technologies for buildings".
Requirements for participation	- none -
Person responsible for the module	Prof. Dr J. von Kiedrowski
Name(s) of the teacher(s)	Prof. Dr. Uwe Schaumann
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.9 % (7/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Jung, H.: Personalwirtschaft, München • Berthel, J. / Becker, F. G.: Personalmanagement. Stuttgart • Becker, M.: Personalentwicklung – Bildung, Förderung und Organisationsentwicklung in Theorie und Praxis. Stuttgart • Lindner-Lohmann, D. / Lohmann, F. / Schirmer, U.: Personalmanagement. Heidelberg Recommended additional reading (current edition in each case): • Bröckermann, R./Müller-Vorbrüggen, M. (Hrsg.): Handbuch Personalentwicklung – Die Praxis der Personalbildung, Personalförderung und Arbeitsstrukturierung. Stuttgart • Ryschka, J./Solga, M./Mattenklott (Hrsg.): Praxishandbuch Personalentwicklung – Instrumente, Konzepte, Beispiele. Wiesbaden • Malik, F.: Führen Leisten Leben. Wirksames Management für eine neue Zeit. Stuttgart, München 2000 • Thom, N./Zaugg, R. J. (Hrsg.): Moderne Personalentwicklung – Mitarbeiterpotenziale erkennen, entwickeln und fördern. 2., aktualisierte Auflage, Wiesbaden 2007

Module No./Code	BWM 9
Module name	Marketing
If necessary, classes as part of module	BWM 9.1 Basics of marketing BWM 9.2 Marketing instruments in SMEs
Module's scope	Basics of marketing • Tasks and goals of marketing • Strategic marketing planning Marketing instruments in SMEs • Product, pricing, and distribution policy • Communication policy and developing advertising ideas in SMEs
Learning outcomes	Students should: • be able to identify the goals, tasks, and concept of marketing • be able to critically reflect on the importance of the market service offer for SMEs • be able to present and use various market analysis options • apply basic notions, concepts, and instruments of product, price, and distribution policy • be able to compare goals and tools related to the development of advertising ideas as well as evaluate and select them for use in SMEs • be able to present goals and instruments for public relations and apply them in SMEs • be able to distinguish and apply methods of measuring customer satisfaction • be able to critically discuss various activities related to maintaining customer loyalty and plan their application in SMEs
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (58 full-time course / 92 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	Participation in this module is necessary to take part in basic module BWM 7. The module is not included in other courses.
Requirements for participation	- none -
Person responsible for the module	Prof. Dr J. von Kiedrowski

Name(s) of the teacher(s)	P. Wölki
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Kotler, P. / Armstrong, G. / Harris, L. C. / Piercy, N.: Grundlagen des Marketing. München • Meffert, H. / Burmann, Ch. / Kirchgeorg, M.: Marketing - Grundlagen marktorientierter Unternehmensführung. Wiesbaden Recommended additional reading (current edition in each case): • Meffert, H. / Bruhn, M.: Dienstleistungsmarketing, Wiesbaden

Module No./Code	BWM 10
Module name	External accounting
If necessary, classes as part of module	BWM 10.1 Accounting BWM 10.2 Annual financial statement, income statement, and balance sheet
Module's scope	Accounting • Goals, tasks, and basic concepts of accounting • Double accounting system • Accounting for significant business transactions in SMEs • Preparation of the annual financial statement Annual financial statement, income statement, and balancing • Balancing assets and capital of a company • Income statement • Tasks and structure of a balance sheet • Balance sheet analysis and selected key parameters
Learning outcomes	Students should: • be able to describe the tasks and goals of accounting • explain the principles of the double accounting system • be able to use accounting records and techniques of registering important business transactions on accounts • be able to present the process of preparing an annual financial statement and think critically about its significance and consequences • be able to explain the relationships between elements of an annual financial statement • be able to analyze and evaluate annual financial statements based on selected key parameters.
Academic Year (SJ)	2. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (72 full-time course / 103 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	Participation in this module is necessary to take part in basic modules BWM 14 and BWM 18. The module is not included in other courses.
Requirements for participation	- none -
Person responsible for the module	Prof. Dr J. von Kiedrowski
Name(s) of the teacher(s)	

Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.8 % (7/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Coenenberg, A. G.: Einführung in das Rechnungswesen. Grundlagen der Buchführung und Bilanzierung. Stuttgart • Handelsgesetzbuch HGB. Beck-Texte im dtv. München Recommended additional reading (current edition in each case): • Döring, U. / Buchholz R.: Buchhaltung und Jahresab-schluss. Mit Aufgaben Lösungen und Klausurtraining. Ber-

Module No./Code	BWM 11
Module name	Investments and financing
If necessary, classes as part of module	BWM 11.1 Investments BWM 11.2 Financing
Module's scope	Investments • Goals, tasks, and basic concepts related to investments • Investment planning • Static and dynamic investment calculation procedures Financing • Goals, tasks, and basic concepts related to financing • Financial planning • Forms of internal and external financing
Learning outcomes	Students should: • be able to present the goals, tasks, and basic concepts related to investments • be able to determine investment needs • be able to use an investment account as a tool to solve decision problems • be able to apply and critically evaluate static and dynamic procedures related to the investment account, • be able to present the goals, tasks, and basic concepts related to financing • be able to present the basic relationships as well as evaluate and choose instruments to finance companies • be able to develop financial plans and determine the resulting liquidity or capital needs • be able to identify and critically discuss basic financing options for SMEs
Academic Year (SJ)	2. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (72 full-time course / 103 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	Participation in this module is necessary to take part in basic module BWM 14. The module is not included in other courses.
Requirements for participation	
Person responsible for the module	Prof. Dr J. von Kiedrowski

Name(s) of the teacher(s)	currently no information available
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Becker, H. P. / Peppmeier, A.: Investition und Finanzierung. Grundlagen der betrieblichen Finanzwirtschaft. Wiesbaden • Perridon, L. / Steiner, M. / Rahtgeber, A.: Finanzwirtschaft der Unternehmung. München Recommended additional reading (current edition in each case): • Zantow, R. / Dinauer, J. / Schäffler, C.: Finanzwirtschaft des Unternehmens. Die Grundlagen modernen Finanzmanagements. München

Module No./Code	BWM 12
Module name	Knowledge management in SMEs
If necessary, classes as part of module	BWM 12.1 Knowledge management in SMEs
Module's scope	• Tasks, goals, and concepts related to knowledge management • Technical, organizational, and cultural requirements • Basic knowledge management strategies and models • Methods and instruments for knowledge management
Learning outcomes	Students should: • be able to describe the tasks and goals of knowledge management • be able to critically discuss the importance of knowledge management in SMEs • be able to analyze and assess the technical, organizational, and cultural conditions for knowledge management in SMEs • be able to compare and critically discuss knowledge management strategies and models • be able to assess, select, and apply knowledge management methods and instruments for SMEs
Academic Year (SJ)	2. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	- none -
Person responsible for the module	Prof. Dr J. von Kiedrowski
Name(s) of the teacher(s)	Prof. Dr J. von Kiedrowski
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)

Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Probst, G./ Raub, S./ Romhardt, K.: Wissen managen. Wie Unternehmen ihre wertvollste Ressource optimal nutzen. Wiesbaden Recommended additional reading (current edition in each case): • Kohl, H. / Mertins, K. / Seidel, H. (Hrsg.): Wissensmanagement im Mittelstand. Grundlagen, Lösungen, Praxisbeispiele. Berlin, Heidelberg • Heisig, P.: Integration von Wissensmanagement in Geschäftsprozesse. Berlin

Module No./Code	BWM 13
Module name	Basics of commercial law and labor law
If necessary, classes as part of module	BWM 13.1 Basics of business law BWM 13.2 Labor and social security law
Module's scope	Basics of commercial law • Commercial contract law • Contracts for specific work • General terms and conditions of trade • Court proceedings by writ-of-payment and complaint proceedings, enforcement proceedings • Environmental protection law • Craft law and business law • Commercial law and company law Labor and social security law • Contract of employment • Work safety • Termination of employment and protection against dismissal • Articles of association • Review of social security law
Learning outcomes	Students should: • be able to present the basic principles and structures of the German legal system • be able to assess the regularity of legal transactions • critically discuss key aspects of family and inheritance law and consider its impact on ownership in SMEs • be able to describe and discuss the principles and guidelines of public environmental law • define and evaluate the legal terms of purchase and service contracts • be able to describe and evaluate the elements and legal effects of general terms and conditions of trade • know and take into account the provisions of craft and business law. • be able to identify the provisions of commercial and company law and assess their importance for SMEs • be able to present legal regulations regarding occupational health and safety and social security • be able to present the basics of labor law for SMEs • be able to describe and apply the rules regarding termination of employment and protection against dismissal • be able to identify and critically discuss the provisions of articles of association • be able to discuss legal provisions in the field of social security and demonstrate their consequences for SMEs.
Academic Year (SJ)	2. SJ
Module's duration	0.5 SJ

Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (58 full-time course / 92 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	- none -
Person responsible for the module	Prof. Dr. U. Schaumann
Name(s) of the teacher(s)	Dr. J. Langosch
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Brox, H./Rüthers, B./Henssler, M.: Allgemeiner Teil des BGB. München • Brox, H./Rüthers, B./Henssler, M.: Allgemeines Schuldrecht, München • Brox, H./Rüthers, B./Henssler, M.: Arbeitsrecht, Stuttgart • Arbeitsgesetze, Beck-Texte im dtv, München Recommended additional reading (current edition in each case): • Becker, B.: Das neue Umweltrecht 2010. C.H. Beck, München • Däubler, W.: Arbeitsrecht. Ratgeber für Beruf, Praxis und Studium. Frankfurt/Main

Module No./Code	BWM 14
Module name	Internal Accounting
If necessary, classes as part of module	BWM 14.1 Cost and result account BWM 14.2 Basics of taxation in business economics
Module's scope	Cost and result account • Tasks, goals, and basic concepts related to cost and result account • Structure, tasks, and procedures regarding cost division by type, cost centers, and settlement of cost drivers • Types of cost accounting systems • Tasks and procedures for full, partial, and planned cost accounting Basics of taxation in business economics • Basic concepts of taxation in business economics • Types of single taxes • General guidelines of tax procedural law • Impact of taxes on company decisions
Learning outcomes	Students should: • be able to present the basics, tasks, and goals of cost and result account • be able to distinguish the basic concepts of cost and result account, • be able to identify, analyze, and systematize relevant types of costs, • be able to cost centers and distribute primary and secondary costs, and take corresponding surcharge rates into account. • be able to present a method for settling cost drivers and create a cost settlement sheet in a company • be able to distinguish between settlement methods and use them to determine the prices offered, • be able to present the short-term importance of an income statement for business management, • be able to distinguish and apply various cost accounting systems, in particular planned cost accounting • be able to describe the structure of the tax system, types of taxes and taxation procedures • be able to distinguish and apply appropriate types of single taxes • be able to identify and assess the impact of taxes on business decisions regarding location, legal form, investments, and financial matters
Academic Year (SJ)	2. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7

Total hours	175 (62 full-time course / 113 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	Participation in this module is necessary to take part in basic module BWM 18. The module is not included in other courses.
Requirements for participation	Participation in basic modules BWM 10 and BWM 11
Person responsible for the module	Prof. Dr. U. Schaumann
Name(s) of the teacher(s)	Dr. J. Langosch
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Däumler, K.-D. / Grabe, J.: Kostenrechnung 1 – Grundlagen. Mit Fragen und Aufgaben, Antworten und Lösungen, Testklausuren. Herne • Breithecker, V.: Einführung in die Betriebswirtschaftliche Steuerlehre. Mit Fallbeispielen, Übungsaufgaben und Lösungen Recommended additional reading (current edition in each case): • Däumler, K.-D. / Grabe, J.: Kostenrechnung 2 – Deckungsbeitragsrechnung. Mit Fragen und Aufgaben, Antworten und Lösungen, Testklausuren. Herne • Buchholz, L. / Gerhards, R.: Internes Rechnungswesen. Kosten- und Leistungsrechnung, Betriebsstatistik und Planungsrechnung. Berlin, Heidelberg • Nickenig, K.: Praxislehrbuch Steuerrecht. Schneller Einstieg in die gesetzlichen Grundlagen. Wiesbaden (mit

Module No./Code	BWM 15
Module name	Materials management
If necessary, classes as part of module	BWM 15.1 Basics of materials management and supply BWM 15.2 Basics of warehouse management
Module's scope	Basics of materials management and supply • Tasks, goals, and basic concepts related to materials management • Procedures for determining material requirements • Material disposition procedure • Supply process Basics of warehouse management • Basics, tasks, and goals of warehouse management • Strategies, tasks, and types of warehousing • Warehousing systems and technology • Internal transportation
Learning outcomes	Students should: • be able to explain and use tasks, goals, and basic concepts related to materials management • be able to distinguish between procedures for determining material requirements and discuss them in a critical way • be able to identify and apply material disposition procedures • be able to analyze and evaluate the supply process • be able to explain and apply the basics, tasks, and goals of warehouse management • be able to present and compare strategies, tasks, and types of warehousing • be able to discuss critically and evaluate warehousing systems and technology • be able to identify internal transportation capabilities • be able to discuss and assess the advantages and disadvantages of internal transportation
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	Participation in this module is necessary to take part in elective module BWM 24. The module is not included in other courses.
Requirements for participation	- none -

Person responsible for the module	Prof. Dr. U. Schaumann
Name(s) of the teacher(s)	Dr. J. Uhlmann
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Arnolds, H. / Heege, F. / Röh, C. / Tussing, W.: Materialwirtschaft und Einkauf. Grundlagen, Spezialthemen und Übungen. Wiesbaden • Bichler, K. / Riedel, G. / Schöppach, F.: Kompakt Edition - Lagerwirtschaft. Grundlagen, Technologien, Verfahren. Wiesbaden Recommended additional reading (current edition in each case): • Oeldorf, G. / Olfert, K.: Materialwirtschaft. Herne • Bichler, K. / Krohn, R. / Riedel, G. / Schöppach, F.: Beschaffungs- und Lagerwirtschaft. Praxisorientierte Darstellung der Grundlagen, Technologien und Verfahren. Wies-

Module No./Code	BWM 16
Module name	Organization and change management
If necessary, classes as part of module	BWM 16.1 Basics of organizational theory and organizational development BWM 16.2 Change management in SMEs
Module's scope	Basics of organizational theory and organizational development • Tasks, goals, and basic concepts related to organizational theory • Basics of process structure and organization • Structural and organizational characteristics of SMEs • Goals, procedures, and instruments of process management • Tasks, goals, and basic concepts related to organizational development Change Management in SMEs • Theories of organizational changes in companies • Goals and theories related to change management • Strategy, organizational structure, corporate culture, and technology as areas of activity in change management • Obstacles and success factors of change management • Characteristics of change management in SMEs
Learning outcomes	Students should: • be able to discuss tasks, goals, and basic concepts related to organizational theory • be able to present and apply the basics of process structure and organization • be able to compare and critically discuss characteristic organizational features of SMEs • be able to present and apply goals, procedures, and instruments of process management • analyze and discuss tasks, goals, and basic concepts related to organizational development • be able to differentiate and evaluate theories of organizational changes in companies • be able to present goals and theories related to change management • be able to analyze and assess strategy, organizational structure, corporate culture, and technology as areas of activity in change management • be able to describe and analyze the obstacles and success factors of change management • be able to identify and evaluate the characteristics of change management in SMEs
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (62 full-time course / 113 self-study)

Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. In general, in terms of form and time, this module is equivalent to module TM 8 on the major "Management of renewable energy technologies for buildings".
Requirements for participation	- none -
Person responsible for the module	Prof. Dr. J. v. Kiedrowski
Name(s) of the teacher(s)	Prof. Dr. J. v. Kiedrowski
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.7 % (7/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Vahs, D.: Organisation ein Lehr- und Managementbuch. Stuttgart • Lauer, T.: Change-Management. Grundlagen und Erfolgsfaktoren. Berlin, Heidelberg Recommended additional reading (current edition in each case): • Schmelzer, H. J. / Sesselmann, W.: Geschäftsprozessmanagement in der Praxis. Kunden zufrieden stellen, Produk-

Module No./Code	BWM 17
Module name	Controlling I
If necessary, classes as part of module	BWM 17.1 Strategic controlling in SMEs BWM 17.2 Basics of risk management in SMEs
Module's scope	Strategic controlling in SMEs • Tasks, goals, and basic concepts of strategic controlling • Basics and challenges related to strategic planning • Theories and instruments of external and internal analysis • Strategy development, planning, and implementation in SMEs Basics of risk management in SMEs • Tasks, goals, and basic concepts of risk management • Risk analysis and control • Methods and tools for planning and implementing risk management in SMEs • Characteristics of risk management in SMEs
Learning outcomes	Students should: • be able to discuss the tasks, goals, and basic concepts of strategic controlling • be able to present and critically discuss the basics and challenges related to strategic planning • be able to describe and apply the theories and instruments of external and internal analysis • be able to present and apply strategy development, planning, and implementation in SMEs • identify the tasks, goals, and basic concepts related to risk management • be able to analyze and assess risk, as well as select and use risk management tools • be able to present and critically discuss methods and instruments for planning and implementing risk management in SMEs • be able to identify the characteristics associated with risk management in SMEs and discuss their consequences
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory, optional, etc.)	Obligatory module

Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	- none -
Person responsible for the module	Prof. Dr. J. v. Kiedrowski
Name(s) of the teacher(s)	S. Boevelka; L. Schley
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Buchholz, L.: Strategisches Controlling. Grundlagen – Instrumente – Konzepte. Wiesbaden • Wolke, T.: Risikomanagement. Berlin, Boston Recommended additional reading (current edition in each case): • Graumann, M.: Fallstudien zum Controlling. Strategisches und operatives Controlling. Praxisnahe Fälle. Mit Lösungshinweisen. Herne

Module No./Code	BWM 18
Module name	Controlling II
If necessary, classes as part of module	BWM 18.1 Principles of operational planning at the company level BWM 18.2 Operational controlling in SMEs
Module's scope	Principles of operational planning at the company level • Tasks, goals, and basic concepts related to operational planning at the company level • General guidelines for cost planning • Operational planning process • Budgeting methods and instruments Operational controlling in SMEs • Tasks, goals, and basic concepts of operational controlling • Operational control in a company, analysis of key parameters and key parameter systems • Methods and instruments of operational business management • Characteristic features of controlling in SMEs
Learning outcomes	Students should: • be able to present the tasks, goals, and basic concepts of operational planning at the company level and classify them in terms of operational controlling • be able to describe and take into account the general guidelines for cost planning • be able to analyze and evaluate the operational planning process • be able to differentiate and choose budgeting methods and instruments • be able to discuss the tasks, goals, and basic concepts in the area of operational controlling • be able to evaluate and apply operational control tools in a company • be able to select and analyze key parameters as well as evaluate and apply key data systems • be able to present and apply the methods and instruments of operational business management • critically discuss the characteristic features of controlling in SMEs
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory, optional, etc.)	Obligatory module

Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	Participation in basic modules BWM 10 and BWM 14
Person responsible for the module	Prof. Dr. Uwe Schaumann
Name(s) of the teacher(s)	currently no information available
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Scheld, G. A.: Controlling im Mittelstand, Band 3: Operatives Unternehmenscontrolling. Berlin Recommended additional reading (current edition in each case): • Rieg, R.: Planung und Budgetierung. Wiesbaden

Module No./Code	BWM 19
Module name	Staff development in SMEs
If necessary, classes as part of module	BWM 19.1 Staff development in SMEs
Module's scope	Basics of staff development • Tasks, goals, and basic concepts in the field of staff development • Structure of staff development • The need for staff development, organizational analysis, task analysis, and staff analysis • Objectives, methods, and instruments for staff development • Controlling and evaluation of staff development
Learning outcomes	Students should: • be able to present the tasks, goals, and basic concepts in the field of staff development • be able to analyze and evaluate the structure of staff development • be able to determine the need for staff development • be able to analyze and assess the goals and framework conditions of companies • be able to analyze critically and discuss issues related to the creation of workplaces and positions • be able to determine and assess employees' current and future results • be able to present and critically discuss the objectives, methods, and instruments for staff development • be able to describe and apply staff development controlling tools • be able to assess staff development in a company
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (48 full-time course / 102 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	Participation in basic module BWM 8
Person responsible for the module	Prof. Dr. Uwe Schaumann
Name(s) of the teacher(s)	Prof. Dr. Uwe Schaumann

Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Ryschka, J. / Solga, M. / Mattenklott, A. (Hrsg.): Praxis-handbuch Personalentwicklung. Instrumente, Konzepte, Beispiele. Wiesbaden Recommended additional reading (current edition in each case): • Becker, M.: Personalentwicklung. Bildung, Förderung und Organisationsentwicklung in Theorie und Praxis. Stuttgart

Module No./Code	BWM 20
Module name	Qualifications of trainers in SMEs
If necessary, classes as part of module	BWM 20.1: Qualifications of trainers in SMEs
Module's scope	Qualifications of trainers in SMEs • Checking training requirements and training planning • Preparation of trainings and employment of apprentices • Conducting trainings • Training completion
Learning outcomes	Students should: • be able to verify the basic requirements for training in a company in terms of professional and educational criteria as well as legislation • be able to identify and evaluate the possibilities of training planning • be able to create and critically discuss the preparation of a training program in terms of professional and educational issues • be able to critically discuss, select, and employ trainees • be able to distinguish and apply training methods and instruments • be able to plan, apply, and evaluate progress monitoring activities • be able to analyze and evaluate diverse target groups • be able to plan and implement training completion in accordance with the company, professional, and educational criteria • be able to identify career opportunities and carry out systematic staff development
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (72 full-time course / 103 self-study)
Module type (obligatory, optional, etc.)	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	Participation in basic module BWM 19

Person responsible for the module	Prof. Dr. Uwe Schaumann
Name(s) of the teacher(s)	Prof. Dr. Uwe Schaumann
Course language	German
Exam type / requirements for awarding academic achievement points	Written exam, 180 min and practical examination with an expert discussion
Grade's contribution to the total grade	3.7 % (7/180)
Teaching and learning methods	Lectures, practical classes, seminar, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Ruschel, A. / Jüttemann, S.: Arbeits-und Berufspädagogik für Ausbilder in vier Handlungsfeldern, Herne • Brand, U. / Buschfeld, D. / Esser, F.-H. et. al.: Sackmann – das Lehrbuch für die Meisterprüfung Teil IV: Berufs- und Arbeitspädagogik, Ausbildung der Ausbilder mit Lernportal. Düsseldorf Recommended additional reading (current edition in each case): • Becker, M.: Personalentwicklung. Bildung, Förderung und Organisationsentwicklung in Theorie und Praxis. Stuttgart

C. **Elective Modules**

Module No./Code	BWM 21
Module name	Innovation management in SMEs
If necessary, classes as part of module	BWM 21.1: Basics of innovation management BWM 21.2: Creating process, product, and service innovations in SMEs
Module's scope	Basics of innovation management • Tasks, goals, and basic concepts in the field of innovation management • Innovation strategy • Innovation policy • Innovation processes • Technology management • Legal aspects of innovation management Creating process, product, and service innovations in SMEs • Structural features of innovation in SMEs • Planning, implementing, and control of innovation • Innovation organization
Learning outcomes	Students should: • be able to discuss the tasks, goals, and basic concepts in the field of innovation management • be able to develop innovation strategies and policies based on corporate strategy and discuss them in a critical way, taking into account the structural characteristics of SMEs • be able to define the processes related to innovation • be able to classify and evaluate technology management as part of innovation management • understand and take into account the legal aspects of innovation management, especially patent and competition law, as a framework and design factor • be able to identify and critically discuss the structural characteristics of innovation in SMEs • be able to describe and create a cycle of planning, implementation, and control of innovation • be able to describe and evaluate alternatives to organizational embedding of innovation management
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory, optional, etc.)	Elective module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major.

	The module is not included in other courses.
Requirements for participation	none
Person responsible for the module	Prof. Dr. Uwe Schaumann
Name(s) of the teacher(s)	Dr. Sven Uhlmann
Course language	German
Exam type / requirements for awarding academic achievement	Presentation and expert discussion (30 min)
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Kaschny, M. / Nolden, M. / Schreuder, S.: Innovationsmanagement im Mittelstand. Strategien, Implementierung, Praxisbeispiele, Wiesbaden Recommended additional reading (current edition in each case): • Hauschildt, J. / Salomo, S. / Schulz, C. / Kock, A. Innovationsmanagement, München • Schori, K. / Roch, A.: Innovationsmanagement für KMU,

Module No./Code	BWM 22
Module name	Entrepreneurship
If necessary, classes as part of module	BWM 22.1: Enterprise ethics and culture BWM 22.2: Establishment and succession of an enterprise
Module's scope	Enterprise ethics and culture • Basic concepts, tasks, and goals of entrepreneurship • The relationship between ethics and economy • Responsibility and sustainable development • Instruments of responsible entrepreneurship Establishment and succession of an enterprise • Entrepreneurs, opportunities, and risks related to entrepreneurship, resources, organization, and environment as basic elements of entrepreneurship • The process of establishing a business • Special features of company succession for SMEs • Business plan as an instrument helpful in structuring the establishment and succession of a company
Learning outcomes	Students should: • be able to describe the basic concepts, tasks, and goals of entrepreneurship • be able to recognize and critically discuss corporate responsibility and sustainability as a desirable orientation for entrepreneurship • be able to discuss and evaluate the relationship between ethics and economy • be able to apply and critically discuss corporate responsibility instruments, such as CSR and Corporate Governance • be able to discuss issues such as: entrepreneurs, opportunities, and risks related to entrepreneurship, resources, organization, and environment as basic elements of entrepreneurship • be able to describe and evaluate the process of establishing a business • be able to demonstrate and apply the characteristics of business succession for SMEs • be able to apply and evaluate a business plan as an instrument helpful in structuring the establishment and
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory, optional, etc.)	Elective module

Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	none
Person responsible for the module	Prof. Dr. Joachim von Kiedrowski
Name(s) of the teacher(s)	Prof. Dr. Manuel Gottschick, Prof. Dr. Joachim von Kiedrowski
Course language	German
Exam type / requirements for awarding academic achievement	Written exam, 120 min
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Fueglistaller, U. / Müller C./ Müller S./ Volery T: Entrepreneurship. Modelle, Umsetzung, Perspektiven. Mit Fallbeispielen. Wiesbaden • Göbel, E.: Unternehmensethik. Grundlagen und praktische Umsetzung, Stuttgart Recommended additional reading (current edition in each case): • Vogelsang, E. / Fink, C. / Baumann, M.: Existenzgründung und B Businessplan. Ein Leitfaden für erfolgreiche Start-

Module No./Code	BWM 23
Module name	Business English (intensification)
If necessary, classes as part of module	BWM 23.1 Business English (intensification)
Module's scope	• Making Decisions • People Skills: Stress • Management Scenario: Pitch and persuade • Emailing • Making an Impact • Out and About • People Skills: Delegation • Management Scenario: Change champion • Teleconferencing • Negotiating Deals • People Skills: Mediation • Management Scenario: Moral quarrel
Learning outcomes	Students should: • be able to make decisions in difficult situations during discussions • be able to analyze the attitude towards stress in the workplace • be able to choose effective pitching techniques • be able to create and evaluate business e-mails, create appropriate e-mails • be able to create and analyze the appropriate start of a presentation; follow the basic rhetorical principles • be able to prepare information for delegation purposes in management • be able to make telephone conversations and video conferences, summarize conversations, and deal with critical situations • be able to plan and lead negotiations • know and be able to analyze the basics of mediation
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (64 full-time course / 86 self-study)
Module type (obligatory, optional, etc.)	Elective module
Module's applicability	As an interdisciplinary module, it serves the acquisition of soft skills and helps in understanding English specialist texts during the course. The module is not included in other courses.

Requirements for participation	- none -
Person responsible for the module	Prof. Dr J. von Kiedrowski
Name(s) of the teacher(s)	Henning Prüß, currently no information available
Course language	English
Exam type / requirements for awarding academic achievement points	Written exam (90 min) and oral exam (20 min)
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Powell, M./Allison, J.: In Company 3.0 – Upper Intermediate Student's Book Pack (B2+). Macmillan Publishing. London Recommended additional reading (current edition in each case): • Schofield, J.: Double Dealing. Intermediate Business English Course. Summertown Publishing ltd. • Stock (Hrsg.): Business Spotlight. Englisch für den beruflichen Erfolg. Kwartalnik. München

Module No./Code	BWM 24
Module name	Introduction to business computing
If necessary, classes as part of module	BWM 23.1: Basics of business computing BWM 23.2: Digitization of business processes
Module's scope	Basics of business computing • Tasks, goals, and basic concepts related to business computing • Relationship between information technology and organization • Modeling methods • Basics of software development • Operating application systems Digitization of business processes • Communication technology and network infrastructures • Digitization and networking of products • Digitization of processes through ERP systems
Learning outcomes	Students should: • be able to describe the tasks, goals, and basic concepts related to business computing • be able to explain and discuss the relationship between an organization and information technology • be able to present, select, and apply modeling methods • be able to describe and evaluate the basics, activities, and process models of software development • be able to structure and explain operational application systems • be able to present communication technology and network infrastructures as a condition for digitization • be able to recognize and critically discuss the opportunities and threats related to digitization and networking of products • be able to present and assess the advantages and disadvantages of process digitization using ERP systems • be able to compare and assess the possibilities and limitations of digitization of value chains and business models
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory, optional, etc.)	Elective module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major.

	The module is not included in other courses.
Requirements for participation	none
Person responsible for the module	Prof. Dr. Joachim von Kiedrowski
Name(s) of the teacher(s)	Prof. Dr. Manuel Gottschick, Prof. Dr. Joachim von Kiedrowski
Course language	German
Exam type / requirements for awarding academic achievement	Portfolio with presentation
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Scharzer, B. / Krcmar, H.: Wirtschaftsinformatik: Grundla- gen betrieblicher Informationssysteme. Stuttgart • Barton, T. / Müller, C. / Seel, C. (Hrsg.): Digitalisierung in Unternehmen. Von den theoretischen Ansätzen zur prakti- schen Umsetzung. Wiesbaden Recommended additional reading (current edition in each case):

Module No./Code	BWM 25
Module name	Supply Chain Management
If necessary, classes as part of module	BWM 25.1: Basics of supply chain management BWM 25.2: Creating logistics processes
Module's scope	Basics of supply chain management: • Tasks, goals, and basic concepts in the field of supply chain management • Strategies of supply chain management • Models for creating supply chain management • Planning, control, and optimization of supply, production, and distribution management Creating logistics processes • Tasks, goals, and basic concepts in the field of logistics • Logistics strategy and logistics controlling • Information and communication systems in logistics • External transportation • Modeling and coordination of logistics networks
Learning outcomes	Students should: • be able to describe the tasks, goals, and basic concepts in the field of supply chain management • be able to discuss and compare strategies of supply chain management • be able to differentiate and evaluate models for creating supply chain management • be able to present and analyze planning, control, and optimization of supply, production, and distribution management • be able to explain the tasks, goals, and basic concepts in the field of logistics • be able to develop and apply logistics strategies and logistics controlling • be able to compare and evaluate information and communication systems in logistics • be able to plan external transport • be able to identify and critically discuss the possibilities and limitations of modeling and coordination of logistics
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	6
Total hours	150 (52 full-time course / 98 self-study)
Module type (obligatory, optional, etc.)	Elective module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major.

	The module is not included in other courses.
Requirements for participation	Participation in module BWM 15 Materials management
Person responsible for the module	Prof. Dr. Joachim von Kiedrowski
Name(s) of the teacher(s)	Dr. Sven Uhlmann
Course language	German
Exam type / requirements for awarding academic achievement	Portfolio with an oral exam (20 min)
Grade's contribution to the total grade	3.3 % (6/180)
Teaching and learning methods	Lectures, practical classes, self-study
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading (latest edition in each case): • Schulte, C.: Logistik. Wege zur Optimierung der Supply Chain. München Recommended additional reading (current edition in each case): • Werner, H.: Supply Chain Management: Grundlagen,

D. **Practical modules**

Module No./Code	BPR 26
Module name	Reflections on practice 1
If necessary, classes as part of module	
Module's scope	Module Reflections on Practice 1 combines business economics with business/professional tasks and guides students towards scientific analysis of their professional activity. As part of their reflections on practice, students should primarily be able to use the methodological knowledge acquired in the business modules listed below to solve problems of low complexity as found in operational practice. • BWM 5 Basics of general economics • BWM 6 Basics of business economics II • BWM 7 Basics of business economics II • BWM 8 Basics of human resource management • BWM 9 Marketing
Learning outcomes	Students should: • be able to present findings from operational practice • be able to combine it with the basic methods, procedures, and management instruments originating from a module of choice (BWM 5 to BWM 9)
Academic Year (SJ)	1. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	5
Total hours	125 (4 full-time course / 121 self-study)
Module type (obligatory, optional, etc.)	Practical module (obligatory)
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	Participation in at least one module from BWM 5 to BWM 9
Person responsible for the module	Prof. Dr. Joachim von Kiedrowski
Name(s) of the teacher(s)	currently no information available (Supervisor of the Reflections on Practice module)
Course language	German
Exam type / requirements for awarding academic achievement	Portfolio with an expert discussion

Grade's contribution to the total grade	2.7 % (5/180)
Teaching and learning methods	Self-study with care
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading * (current edition in each case): • Balzert, H. / Schäfer, C. / Schröder, M. / Kern, U.: Wissen- schaftliches Arbeiten. Ethik, Inhalt & Form wiss. Arbeiten, Handwerkszeug, Quellen, Projektmanagement, Präsenta- tion. Berlin * and literature indicated in individual modules Recommended additional reading (current edition in each case):

Module No./Code	BPR 27
Module name	Reflections on practice 2
If necessary, classes as part of module	
Module's scope	Module Reflections on Practice 2 combines business economics with business/professional tasks and guides students towards scientific analysis of their professional activity. As part of their reflection on practice, students should primarily focus on the methodological knowledge acquired in the following business modules related to basic issues of low to medium complexity resulting from business practice. • BWM 10 External accounting • BWM 11 Investments and financing in SMEs • BWM 12 Knowledge management • BWM 13 Basics of commercial law and labor law • BWM 14 Internal accounting and taxation in business economics • In addition, it is possible to choose topics from the modules of the first academic year (BWM 5 - BWM 9).
Learning outcomes	Students should: • be able to obtain information on practical activities in a company as well as process and document it, • be able to combine it with the basic management methods, procedures, and instruments from a module of choice (BWM 5 to BWM 14) • be able to present key results
Academic Year (SJ)	2. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (4 full-time course / 171 self-study)
Module type (obligatory, optional, etc.)	Practical module (obligatory)
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	Participation in at least one module from BWM 5 to BWM 14
Person responsible for the module	Prof. Dr. Joachim von Kiedrowski
Name(s) of the teacher(s)	currently no information available (Supervisor of the Reflections on Practice module)
Course language	German

Exam type / requirements for awarding academic achievement	Portfolio with presentation and an expert discussion
Grade's contribution to the total grade	3.8 % (7/180)
Teaching and learning methods	Self-study with care
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading * (current edition in each case): • Klein, A.: Wissenschaftliches Arbeiten im Dualen Studium. Stuttgart * and literature indicated in individual modules Recommended additional reading (current edition in each case): • Balzert, H. / Schäfer, C. / Schröder, M. / Kern, U.: Wissenschaftliches Arbeiten. Ethik, Inhalt & Form wiss. Arbeiten, Handwerkszeug, Quellen, Projektmanagement, Präsenta-

Module No./Code	BPR 28
Module name	Reflections on practice 3
If necessary, classes as part of module	
Module's scope	Module Reflections on Practice 3 combines business economics with business/professional tasks and guides students towards deep scientific analysis of their professional activity. As part of their reflection on practice, students should primarily focus on the methodological knowledge acquired so far and as part of the following business modules related to the basic issues of medium complexity resulting from business practice. • BWM 15 Materials management • BWM 16 Organization and change management • BWM 17 Controlling I
Learning outcomes	Students should: • be able to identify economic problems and tasks of medium complexity • be able to analyze states, processes, or situations based on previously acquired knowledge in the field of business management • be able to take into account test results • identify states, processes, or situations related to operational activities based on methods and principles • be able to reasonably propose project solutions or suggestions
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	8
Total hours	200 (4 full-time course / 196 self-study)
Module type (obligatory, optional, etc.)	Practical module (obligatory)
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	Participation in at least one module from BWM 5 to BWM 22
Person responsible for the module	Prof. Dr. Joachim von Kiedrowski
Name(s) of the teacher(s)	currently no information available (Supervisor of the Reflections on Practice module)
Course language	German

Exam type / requirements for awarding academic achievement	Reflections on practice
Grade's contribution to the total grade	4.4 % (8/180)
Teaching and learning methods	Self-study with care
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading * (current edition in each case): • Klein, A.: Wissenschaftliches Arbeiten im Dualen Studium. Stuttgart • Balzert, H. / Schäfer, C. / Schröder, M. / Kern, U.: Wissenschaftliches Arbeiten. Ethik, Inhalt & Form wiss. Arbeiten, Handwerkszeug, Quellen, Projektmanagement, Präsentation. Berlin • Eisend, M./Kuß, A.: Grundlagen empirischer Forschung. Zur Methodologie in der Betriebswirtschaftslehre. Wiesbaden * and literature indicated in individual modules Recommended additional reading (current edition in each case): • Kornmeier, M.: Wissenschaftstheorie und Wissenschaftliches Arbeiten: Eine Einführung für Wirtschaftswissenschaftler. Heidelberg • Atteslander, P.: Methoden der empirischen Sozialforschung. Berlin • Schnell, R./Hill, P. B./Esser, E.: Methoden der empirischen Sozialforschung. München • Flick, U./von Kardorff, E./Steinke, I. (Hrsg.): Qualitative Forschung. Reinbek

Module No./Code	BPR 29
Module name	Capstone project
If necessary, classes as part of module	
Module's scope	The Capstone project includes a complex operational, practical problem, which is approached in an application-oriented and multidisciplinary manner, as far as possible, on the basis of the contents and competences acquired during the course. The work is carried out in groups (teams) of students with 4 to 5 participants. In terms of content, the students participating in the Capstone project should work on the knowledge acquired in all business modules from the first three years of study that have been completed so far, which is highly complex in relation to operational problems.
Learning outcomes	Students should: • be able to identify economic problems and tasks of high complexity • be able to analyze structures in complex practical problems • be able to select and justify relevant theories, models, methods, or tools for solving problems • be able to create and evaluate solutions to problems based on theoretical foundations • be able to reflect on the experience gained from teamwork processes • be able to discuss their own solutions to problems, including issues such as practical relevance, ethical issues, and economic consequences
Academic Year (SJ)	3. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	7
Total hours	175 (32 full-time course / 143 self-study)
Module type (obligatory, optional, etc.)	Practical module (obligatory)
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	Participation in at least one module from BWM 5 to BWM 22
Person responsible for the module	Prof. Dr. Joachim von Kiedrowski
Name(s) of the teacher(s)	currently no information available (Supervisor of the Reflections on Practice module)

Course language	German
Exam type / requirements for awarding academic achievement	Portfolio with presentation and an expert discussion
Grade's contribution to the total grade	3.8 % (7/180)
Teaching and learning methods	Self-study with care
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading * (current edition in each case): • Klein, A.: Wissenschaftliches Arbeiten im Dualen Studium. Stuttgart • Balzert, H. / Schäfer, C. / Schröder, M. / Kern, U.: Wissenschaftliches Arbeiten. Ethik, Inhalt & Form wiss. Arbeiten, Handwerkszeug, Quellen, Projektmanagement, Präsentation. Berlin • Eisend, M./Kuß, A.: Grundlagen empirischer Forschung. Zur Methodologie in der Betriebswirtschaftslehre. Wiesbaden * and literature indicated in individual modules Recommended additional reading (current edition in each case): • Kornmeier, M.: Wissenschaftstheorie und Wissenschaftliches Arbeiten: Eine Einführung für Wirtschaftswissenschaftler. Heidelberg • Atteslander, P.: Methoden der empirischen Sozialforschung. Berlin • Schnell, R./Hill, P. B./Esser, E.: Methoden der empirischen Sozialforschung. München • Flick, U./von Kardorff, E./Steinke, I. (Hrsg.): Qualitative For-

Module No./Code	BPR 30
Module name	Reflections on practice 4
If necessary, classes as part of module	
Module's scope	Module Reflections on practice 4 is aimed at intensive preparation for writing a BA thesis. In the fourth (last) year of study, students should be able individually work on more complex business problems, in a manner similar to the previous Reflections on practice modules (BPR 1 - BPR 3). In addition to scientifically sound analysis of the available material and existing problems, the focus should also be on the application and, if necessary, the reasonable extension or continuation of the methods, procedures, and instruments used to solve or create tasks or issues of operational importance. As part of this module, it is also possible to use reflections that go beyond the module's scope, analyses, or evaluations in order to expand the diversity of perspectives for the purpose of task and problem processing. As part of this module, in terms of substance, students should use the knowledge acquired in all business modules completed so far.
Learning outcomes	Students should: • be able to analyze and estimate demanding tasks and operational problems based on sound scientific foundations and use innovative solutions as an extension or continuation of the applied methods, procedures, and instruments • be able to critically reflect on issues related to the assumptions of the module or go beyond it to carry out analyzes or assessments to increase the diversity of perspectives
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	8
Total hours	200 (4 full-time course / 196 self-study)
Module type (obligatory, optional, etc.)	Practical module (obligatory)
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	Participation in at least one module from BWM 5 to BWM 24

Person responsible for the module	Prof. Dr. Joachim von Kiedrowski
Name(s) of the teacher(s)	currently no information available (Supervisor of the Reflections on Practice module)
Course language	German
Exam type / requirements for awarding academic achievement	Reflections on practice
Grade's contribution to the total grade	4.4 % (8/180)
Teaching and learning methods	Self-study with care
Special information (e.g. online classes, visits during	- none -
Literature	Obligatory reading * (current edition in each case): • Klein, A.: Wissenschaftliches Arbeiten im Dualen Studium. Stuttgart • Balzert, H. / Schäfer, C. / Schröder, M. / Kern, U.: Wissenschaftliches Arbeiten. Ethik, Inhalt & Form wiss. Arbeiten, Handwerkszeug, Quellen, Projektmanagement, Präsentation. Berlin • Eisend, M./Kuß, A.: Grundlagen empirischer Forschung. Zur Methodologie in der Betriebswirtschaftslehre. Wiesbaden * and literature indicated in individual modules Recommended additional reading (current edition in each case): • Kornmeier, M.: Wissenschaftstheorie und Wissenschaftliches Arbeiten: Eine Einführung für Wirtschaftswissenschaftler. Heidelberg • Atteslander, P.: Methoden der empirischen Sozialforschung. Berlin • Schnell, R./Hill, P. B./Esser, E.: Methoden der empirischen Sozialforschung. München • Flick, U./von Kardorff, E./Steinke, I. (Hrsg.): Qualitative Forschung. Reinbek

E. **Bachelor's thesis**

Module No./Code	BWM 31
Module name	Bachelor's thesis
If necessary, classes as part of module	
Module's scope	
Learning outcomes	Students should: based on the knowledge acquired during studies, be able to register, analyze, and evaluate problematic, interdisciplinary, application-oriented problems using scientific methods, procedures, and instruments in an independent manner within the planned time, as well as develop solutions to problems and present in writing the procedure and results in accordance with scientific standards.
Academic Year (SJ)	4. SJ
Module's duration	0.5 SJ
Module's availability	In each academic year
ECTS points awarded	12
Total hours	300 (... full-time course / ... self-study)
Module type (obligatory,	Obligatory module
Module's applicability	The module is not a necessary requirement for the successful completion of the remaining modules of this major. The module is not included in other courses.
Requirements for participation	Meeting recruitment requirements in accordance with study and examination regulations (German: SPO)
Person responsible for the module	Prof. Dr. Joachim von Kiedrowski
Name(s) of the teacher(s)	currently no information available (Bachelor's thesis supervisor)
Course language	German
Exam type / requirements for awarding academic achievement	Bachelor's thesis
Grade's contribution to the total grade	6.6 % (12/180)
Teaching and learning methods	Self-study with care
Special information (e.g. online classes, visits during	- none -
Literature	The supervisors provide students with specific guidelines on the selection and use of literature depending on the topic of the BA thesis.

Result 5.1

Dual Bachelor's Degree Programs

Implementation "Business Administration for SMEs" by Center of vocational Excellence in Lithuania

Prepared by:

Panevezio kolegija with the support of

Panevezys Chamber of Commerce Industry and Crafts

COMPARISON OF BUSINESS ADMINISTRATION SMEs AND BUSINES MANAGEMENT STUDY PROGRAMMES

Study subject / module in Business Administration SMEs Study Program	Credit	Study subject / module in Business Management Study Program Results of the study subject (module)	Credit
Interdisciplinary modules:	**23**		**21**
BWÜ 1. Scientific work and research methodology	6	**Statistics**: know statistical information retrieval principles and apply them to information search. Summarize the accumulated statistical information, analyze it and do statistical calculations. Can use statistical methods for different calculations and data analysis.	3
		Marketing and Market Research: will clarify marketing and market research application options of the science research principles, define marketing research types and methods, perceive marketing and market research core system, create questionnaires and submit them to the study participants, understand the experiment 's execution. Will be able to understand how marketing and market research leads to improved decision-making, will perceive the use of the segmentation as a market research method. Can analyze, organize, evaluate and use the results in organizations' activities.	6
BWÜ 2. Business English	6	**Professional Foreign Language (English):** can communicate in a foreign language, organizing the office work, constructively communicate in meetings, business trips. Will be able to communicate in a foreign language about marketing, finance and labor relations. Know the essential cultural differences in business behavior and perceive global issues.	6
BWÜ 3. Basics of communication and consulting	6	**Business Communication and Negotiation:** Is able to properly prepare and conduct negotiations, taking into account different situations; to prepare oral and written reports, know the general requirements for the preparation of documents, know how to write and formalize business letters correctly, prepare activity and career documents, communicate in the intercultural space. Know and is able to analyze modern negotiation theories and theoretical models; understand the concept, characteristics and peculiarities of	3

Study subject / module in Business Administration SMEs Study Program	Credit	Study subject / module in Business Management Study Program Results of the study subject (module)	Credit
		negotiations; will know the essence and peculiarities of competitive and cooperation negotiations and will be able to apply them properly.	
BWÜ 4. Project management	5	**Project Management (Strategic Management of Organizations):** will perceive project management objectives and essence. Know a consistent project management process will be able to provide the human resources necessary for the project. Know how to prepare the project and formalize it properly. Motivate the project's financial estimates, penetrate the project's management risk factors. Will define the company's strategic direction of the project activities and set goals to achieve them, analyze relevant sources of information and use them for preparation of various projects.	3
Core modules:	**98**		**81**
BWM 5 Basics of general economics	5	**Basics of Economics:** know the economic processes at the level of the national economy, market elements, structures, and features; will be able to analyze economic activity forms and features of the labor market. Will be able to evaluate the potential customers, competitors, their opportunities in the market, know the potential sources of information and use them. Know the short and long-term production and general economic differences of the term profit, can apply the factors of variation principles of the demand and supply, calculate the coefficient of elasticity and the major business indicators. Know the main problems of macroeconomics, the benefits of international trade, the relative and absolute advantage.	3
BWM 6. Basics of business economics I **BWM 7. Basics of business economics II**	10	**Business Economics:** will organize work and calculate the company's labor resources, its demand for capital and the operating result. Know organization of activities in the industrial and commercial enterprises. Will know the types of business, building techniques; will be able to assess the business environment and conditions. Will be able to develop a business plan.	9
BWM 8. Human resources management	7	**Human resources management (Management Module))**	6

Study subject / module in Business Administration SMEs Study Program	Credit	Study subject / module in Business Management Study Program Results of the study subject (module)	Credit
BWM 9. Marketing	6	**Basics of Marketing:** will perceive marketing science and the content, significance and benefits, solving business problems, will be able to see the macro and micro changes and their impact on business operations. Know the potential sources of information and use them. Will be able to identify segments and identify target market, content marketing mix (4P), know and identify links while making decisions for business development, will perceive the logistics' system objectives, functions and the process. Will understand strategic marketing planning and tactics. Will be able to develop and deliver marketing program of activities.	3
		International Marketing (Marketing): will understand international marketing content and significance for Lithuanian companies; will assess foreign economic activity motives and explain international marketing types. Will clarify the international marketing environment, characteristics, as compared with the general environmental marketing requirements. Can define the company's capabilities forms and varieties of entering into the foreign markets and clarify the characteristics of the international marketing mix. Will define company's capabilities to enter foreign markets. Can assess the aspects of the company and employee image building in international markets	3
		Services Marketing: know the characteristics of services marketing, create a strategic plan, can plan services for in-house marketing and design service's promotional actions, and select the measures.	6
		Social Network Marketing: is able to describe the basic concepts of social network marketing, to highlight the specifics of social networks and their analysis methods, to identify the company's business problems in the context of social network marketing and to provide solutions to the problems, to analyze social networks by revealing the possibilities of their use for business development.	3

Study subject / module in Business Administration SMEs Study Program	Credit	Study subject / module in Business Management Study Program Results of the study subject (module)	Credit
BWM 10. External accounting	7	**Accounting and Financial Management:** will perceive the role of accounting and finance companies in economic and financial activity, know laws, regulations and other documents governing the accounting and financial management corporate financial relationship, estate financing principles and characteristics, manage entity accounts. Will provide a source of capital formation and its structure, the need for short-term assets and funding sources, calculate the investment project performance indicators and risks. Review the financial statements' composition and content, assess the company's financial condition and performance indicators. Will predict the company's financial performance, result and plan out the long-term funding efficiency and risk	9
BWM 14. Internal accounting and taxation in business economics	7		
BWM 11. Investments and financing in SMEs	6	**Investments and financing in SMEs (will be included).**	6
BWM 12. Knowledge management in SMEs	6	**Knowledge management in SMEs (PD1):** know the theoretical aspects of information management, can collect, manage, and process information. Will know the theoretical aspects of information management, will be able to collect, manage and process information as well as analyze it on competition aspect, know the process of legal regulation of information and the use potentialities of information technologies in various organizations. Know the use opportunities of information technology in various organizations.	3
BWM 13. Basics of commercial law and labor law	6	**Basics of Law: w**ill be able to analyze the essence of basic legal categories; know the main fields of law provisions, will be able to select and evaluate legal information. Will be able to apply regulatory acts in practical work, know the essential major branches of law provisions, will be able to select and evaluate legal information.	3
		Civil and Business Law: conduct market research and analyze their results.	3
BWM 15. Materials management	6	**Materials management (will be included)**	6

Study subject / module in Business Administration SMEs Study Program	Credit	Study subject / module in Business Management Study Program Results of the study subject (module)	Credit
BWM 16. Organization and change management	7	**Management**: will be able to explain the essence of integration of planning activities under the management levels, know the types of plans under the planned duration of the activity, frequency, the format of the content. Know management decision-making stages and methods, understand the management process components (general and special functions) their interconnections and interdependence, know the types of organizational structures for the management, create control structural scheme. Will understand the importance of employee motivation and methods will be able to compare different management styles and advantages and disadvantages of the methods, will understand the process of organizing the main activities of the staff. Will understand the organization of the control procedure, control system design principles, know performance evaluation criteria and methods.	3
BWM 17. Controlling I	6	**Strategic Management of Organizations:** explain the strategic management concept's formation and content, examine and apply the organization's strategic principles of the analysis and methods and provide opportunities in the various organizations. Will be able to analyze the company's marketing environment. Will know the basics of the strategic management of a process in stages, define a strategic planning process and its methodological aspects, examine the key of strategic planning activities governing documents, assess the organization's mission, vision and the peculiarities of goal formulation in various organizations. Can explain quality management policy in the organization. Will know types of marketing strategies and their characteristics, the essence of marketing strategy and the structure of the strategic marketing planning. Will understand change management principles and choose the various measures. Can explain the formation of strategic management concept development and its content, understand management principles of changes and choose various instruments. Will analyze the strategies and concepts of the various levels of organization strategies	9
BWM 18. Controlling II	6		

Study subject / module in Business Administration SMEs Study Program	Credit	Study subject / module in Business Management Study Program Results of the study subject (module)	Credit
BWM 19. Staff development in SMEs	6	**Leadership:** will be able to apply leadership development methods, integrate them into leadership practice. Is able to form a team needed to achieve goals, creative work and constructive problem solving. Will be able to work in a team and organize and coordinate activities in it. Will be able to identify one's strengths and weaknesses and abilities based on the performed activity reflection and to substantiate the lack of competencies development and career plan and to independently develop leadership competencies.	6
BWM 20. Qualifications of trainers in SMEs	7		
Elective modules (two out of five):	**12**		**12**
BWM 21 Innovation management in SMEs	6	**Innovation management in SMEs (will be included)**	6
BWM 22. Entrepreneurship	6	**Basics of Entrepreneurship** is able to highlight new processes taking place in the knowledge society business and the impact of entrepreneurship on these processes by implementing innovative business ideas. Is able to analyze business processes and models, evaluating various business opportunities, including own business.	3
		Business Ethics: examine the business etiquette rules in the organization and beyond. Can compare business social and moral responsibility, choose the ethical decision making in business organization. Can assess ethical principles of an entrepreneur and analyze business micro-ethics- macro-ethics' impact on the performance of an entity.	3
BWM 22. Business English (intensification)	6	**Business English (intensification) (will be included)**	6
BWM 24. Introduction to business computing	6	**Business Information Technologies and Digitalization:** will be able to collect, systemize, compute and professionally present data using the solutions offered by cloud computing. Will be able to apply customer relationship management and e-commerce systems. Will be able to plan time and manage tasks using the services offered by cloud computing.	6

Study subject / module in Business Administration SMEs Study Program	Credit	Study subject / module in Business Management Study Program Results of the study subject (module)	Credit
BWM 25. Supply Chain Management	6	**Supply Chain Management:** will be able to identify the principles of supply chain management and the possibilities of using technology; select appropriate supply chain infrastructure planning criteria and prepare the project; will be able to plan transport routes, select appropriate transport methods or their combinations for the implementation of supply chain activities using digital technologies.	6
Different modules:			**18**
		Sociology: can adequately select and adapt the test method for the result analysis of services provided. Know the basic sociological terms, concepts and categories and demonstrate methodological skills of assessment.	3
		Applied Mathematics: will be able to deal with financial math's using computer programs and analyze investments. Applied Mathematics Will be able to manage and organize existing data, to process the data collected, to make hypotheses, to create production, transportation, materials economy and scheduling mathematical models. Can create models of basic financial operations, analyze and evaluate investments while creating an optimal investment plan. Can create and work on linear systems of equations, apply the concepts of the theory functions and the differentiation for the determination functions' elasticity.	6
		Electronic Commerce: know the commercial activities of the company, its organization, purchase of goods, their storage and disposal. Will be able to use basic forms of e-commerce and e-payment system.	3
		Sustainable Development: Will be able to explain the concept of sustainable development, its individual dimensions, their role and principles. Will be able to argue their opinion, integrate the principles of sustainable development in decision-making, take responsibility for a common goal.	3

Study subject / module in Business Administration SMEs Study Program	Credit	Study subject / module in Business Management Study Program Results of the study subject (module)	Credit
		Quality Assurance: is able to classify the needs of stakeholders, to highlight the need for user orientation. Is able to describe the development of the ISO 9000 family of quality management standards, their composition, principles, audit, requirements and will be able to apply them. Is able to apply quality management assurance tools, quality troubleshooting tools, problem identification tools, idea generation tools. Is able to apply the basic principles of quality management in a specific organization. Is able to apply the requirements of service quality, environmental, food safety and social responsibility standards in its activities.	3
Practical modules:	**35**		**36**
BPR 26. Reflections on practice 1	5	**Introductory Practice at Enterprises**: become familiar with the different types of firms, their internal procedures, will be able to select appropriate information and submit it to the required format. Become familiar with the company (organization) business technologies, know the company's plans and the conclusion of the system, their format and the frequency and how safe and orderly organize work in the company.	6
BPR 27. Capstone project	7	**Business organization Practice (PMF):** will be aware of safe work and the internal rules of procedures and potential sources of information and know how to use them. Will develop a range of products, analyze sales, will know the marketing mix elements and apply them in the firms' work. Will be able to carry out activities of a trading company according to various sections. Will be able to manage personnel records and carry out recruitment and employment. Register economic events in the account books, create reports, calculate and analyze the results of the performance.	6
BPR 26. Reflections on practice 2	7	**Business Practice in a Company:** Review the company's marketing activities, evaluate internal control's organization and expansion opportunities. Will assess organizational structure, personnel evaluation criteria, know training, payment and other systems of	9

Study subject / module in Business Administration SMEs Study Program	Credit	Study subject / module in Business Management Study Program Results of the study subject (module)	Credit
		motivation. Will assess communication and company image priorities, will present the importance of IT company's marketing activities, will analyze safety requirements applicable to the company, become familiar with the company's quality assurance system and its features. Review the company's marketing activities, evaluate internal control's organization and expansion opportunities.	
BPR 26. Reflections on practice 3	8	**Marketing Research Practice:** will use marketing and market research results to improve organizational performance. Conduct market research and analyze their results. Gather and structure information on the organization's environment, perform an analysis of the organization's activities by survey results, identify marketing and market research methods used to solve a range of problems, carry out marketing and market research in the organization through questionnaires by respondents, collect, systematize, analyze data, draw conclusions and prepare the investigation report. Will use marketing and market research results to improve organizational performance. Know key competitors of the company, business development opportunities in the local and international markets.	3
BPR 26. Reflections on practice 4	8	**Final Practice Final practice:** will be able to accomplish enterprise performance analysis of the situation, know potential sources of information and use them. Conduct marketing mix analysis and motivate the company's marketing strategy. Will know the company's strategic plan preparation documents. Can perform staff system analysis and assess employee motivation scheme. Will be able to present the company's organization and its processes. Know the quality system in the Company. Will be able to perform the financial analysis of the company; know fees and costs of financing sources. Will be able to conduct business partner search.	12
Bachelor's thesis:	**12**		**12**
Bachelor's thesis	12	**Final Thesis**	12

PANEVĖŽIO KOLEGIJA

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REPORT ON THE IMPLEMENTATION OF STUDY PROGRAMME

Business Management

Prepared by Panevėžio kolegija/University of Applied Sciences

2022

CONTENTS

1. THE STUDY PROGRAMME IMPLEMENTATION STATISTICS

1. Number of students register in the study programme:

Autumn semester (*18 students*) Spring semester (*13 students*)

2. Number of students according to gender:

Autumn semester (*9 Men, 9 Women*)

Spring semester (*5 Men, 8 Women*)

3. Number of students according to age:

Age group	*Number*	*Percentage*
Under 20	0	0
20-29	9	69,2
30-39	2	15,4
40-49	2	15,4
50-59	0	0
60+	0	0

4. Number of students remaining at the completion of the study programme:

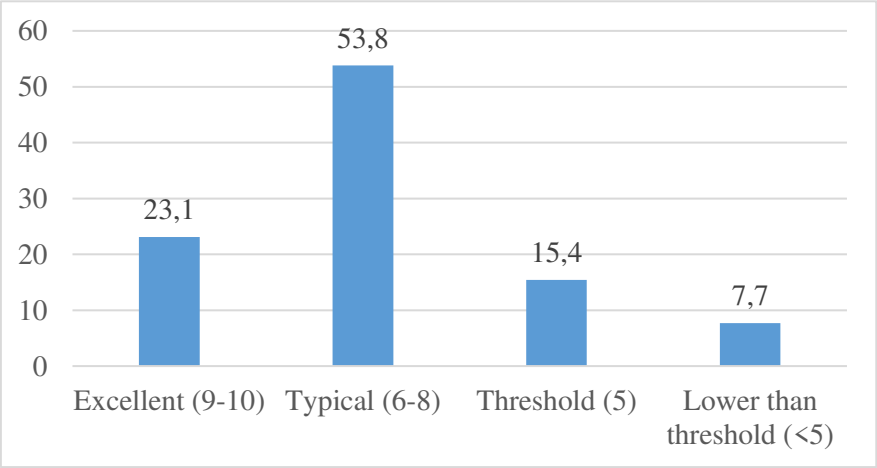
13 students

5. Number of students withdrawn:

5 students

6. Grade Distribution:

Achievements levels	**Number**	**Percentage**
Excellent (9-10)	3	23,1
Typical (6-8)	7	53,8
Threshold (5)	2	15,4
Lower than threshold (<5)	1	7,7



2. THE STUDY PROGRAMME EVALUATION BY STUDENTS

Study programme evaluation by students was performed using online survey. Electronic version of the survey is available at https://forms.gle/hZQW2XX4mCgatXKc6 Online survey was carried out in the last week of the Spring semester. 9 students took part in the survey, i. e. 69,2 percent of students who remained at the completion of the study programme.

7. Evaluation of study programme content and teaching quality

7.1. Results and objectives of study programme are clearly defined

	Number	Percentage
Strongly agree	4	44,4
Agree	4	44,4
Neither agree nor disagree	1	11,1
Disagree	0	0,0
Strongly disagree	0	0,0

7.2. The content was organized and easy to follow

	Number	Percentage
Strongly agree	0	0,0
Agree	9	100
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0

7.3. The content of the subjects of the study programme was not repetitive

	Number	Percentage
Strongly agree	2	22,2
Agree	5	55,6
Neither agree nor disagree	2	22,2
Disagree	0	0,0
Strongly disagree	0	0,0

7.4. The materials distributed were helpful to achieve study programme results

	Number	Percentage
Strongly agree	5	55,6
Agree	3	33,3
Neither agree nor disagree	1	11,1
Disagree	0	0,0
Strongly disagree	0	0,0

7.5. The training process was flexible:

	Number	Percentage
Strongly agree	3	33,3
Agree	4	44,4
Neither agree nor disagree	2	22,2
Disagree	0	0,0
Strongly disagree	0	0,0

7.6. While studying I gained enough theoretical knowledge

	Number	Percentage
Strongly agree	4	44,4
Agree	5	55,6
Neither agree nor disagree	0	0,0

Disagree	0	0,0
Strongly disagree	0	0,0

7.7. There are enough practical / laboratory classes:

	Number	Percentage
Strongly agree	2	22,2
Agree	6	66,7
Neither agree nor disagree	0	0,0
Disagree	1	11,1
Strongly disagree	0	0,0

7.8. The study programme content is in line with the latest technological development trends

	Number	Percentage
Strongly agree	3	33,3
Agree	5	55,6
Neither agree nor disagree	1	11,1
Disagree	0	0,0
Strongly disagree	0	0,0

7.9. The environment required for studies (auditoriums, computerized auditoriums, laboratories) is comfortable and properly equipped

	Number	Percentage
Strongly agree	3	33,3
Agree	5	55,6
Neither agree nor disagree	1	11,1
Disagree	0	0,0
Strongly disagree	0	0,0

7.10. Necessary academic literature and access to information sources is provided

	Number	Percentage
Strongly agree	5	55,6
Agree	4	44,4
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0

7.11. There are enough spaces in the educational institution where it is possible to study individually after lectures

	Number	Percentage
Strongly agree	2	22,2
Agree	5	55,6
Neither agree nor disagree	2	22,2
Disagree	0	0,0
Strongly disagree	0	0,0

7.12. I have a possibility to submit suggestions for improving this study programme

	Number	Percentage
Strongly agree	3	33,3
Agree	4	44,4
Neither agree nor disagree	2	22,2
Disagree	0	0,0
Strongly disagree	0	0,0

7.13. The study programme prepares me for the future in the working life

	Number	Percentage
Strongly agree	3	33,3
Agree	6	66,7
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0

7.14 The experience I gained will be useful in my work

	Number	Percentage
Strongly agree	3	33,3
Agree	6	66,7
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0

7.15 I will recommend this study programme to others

	Number	Percentage
Strongly agree	3	33,3
Agree	5	55,6
Neither agree nor disagree	1	11,1
Disagree	0	0,0
Strongly disagree	0	0,0

7.16. Do you have any comments about any of your answers to the questions in this section?

No, just it that I like to study in this college

No

7.17. Please also provide an overall assessment of your studies on a five-point scale (5-highest, 1- lowest rating). Content of the study program (theoretical and practical classes of subjects, internship)

	Number	Percentage
5	4	44,4
4	5	55,6
3	0	0,0
2	0	0,0
1	0	0,0

7.18. Please also provide an overall assessment of your studies on a five-point scale (5-highest, 1- lowest rating). Management of study program (human and material resources, organization of the study process and assessment)

	Number	Percentage
5	4	44,4
4	3	33,3
3	2	22,2
2	0	0,0
1	0	0,0

7.19. Do you have any comments about any of your answers to the questions in this section?

No, I like everything in my studies

7.20. What you liked most in this study programme?

Preparation and presentation of slides in marketing and International marketing
The fact that the material is clearly explained, the lectures are conducted in an interesting way
The teachers. Not all of them but many of them were really helpful and friendly.
Possibility of distance learning.
The content of the subjects of the study programme
I liked communicating with the teachers, I learned a lot of new things.
Everything

7.21. Which specific difficulties you encountered during the studies?

I don't know
Mathematics
There were no difficulties (2 students)
Frankly speaking one and the most difficult thing during studies for me was time management.
Lack of time (2 students)
In the beginning, there was some difficulty with distance learning.

7.22. If the training was repeated, what should be left or changed?

However, I finished the first year, so what to left or change I can't say
I think nothing
Everything should be fine, no complaints
I believe that some of the teachers needs to plan their time more properly.
Continue to provide distance learning opportunities.
Decide marketing or international marketing is more important in this study programme
To leave
No
Nothing

3. THE STUDY PROGRAMME EVALUATION BY TEACHERS

Study programme evaluation by teacher was performed using online survey. Electronic version of the survey is available https://forms.gle/Bgw96epvvryPfg8d7. Online survey was caried out in the last week of the Spring semester. 10 teachers took part in the survey, i. e. 71,4 percent of teachers who worked in the study programme.

8. Evaluation of study programme structure and description:

8.1. Do you agree that the study programme objectives meet the needs of the labour market?

	Number	Percentage
Strongly agree	3	30,0
Agree	7	70,0
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.2. Do you agree that the study programme objectives meet the level of the certificate?

	Number	Percentage
Strongly agree	2	20,0

Agree	8	80,0
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.3. Do you agree that the scope of the study programme is sufficient to achieve the study programme objectives?

	Number	Percentage
Strongly agree	4	40,0
Agree	6	60,0
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.4. Do you agree that the target group is clear and well defined?

	Number	Percentage
Strongly agree	2	20,0
Agree	7	70,0
Neither agree nor disagree	1	10,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.5. Do you agree that the scope of the modules is sufficient to achieve the learning outcomes of the study programme?

	Number	Percentage
Strongly agree	3	30,0
Agree	6	60,0
Neither agree nor disagree	1	10,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.6. Do you agree that the order of the modules within the study programme plan is appropriate?

	Number	Percentage
Strongly agree	3	30,0
Agree	6	60,0
Neither agree nor disagree	1	10,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.7. Do you agree that the all modules are relevant to study programme?

	Number	Percentage
Strongly agree	3	30,0
Agree	7	70,0
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.8. Do you agree that the balance between theory and practice within the study programme is appropriate??

	Number	Percentage
Strongly agree	3	30,0
Agree	5	50,0
Neither agree nor disagree	2	20,0

Disagree	0	0,0
Strongly disagree	0	0,0

8.9. Do you agree that the study programme content is modern?

	Number	Percentage
Strongly agree	3	30,0
Agree	7	70,0
Neither agree nor disagree	1	10,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.10. Do you agree that the assessment of study programme mastering quality is appropriate?

	Number	Percentage
Strongly agree	3	30,0
Agree	7	70,0
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.11. Do you agree that the assessment of modules is appropriate?

	Number	Percentage
Strongly agree	4	40,0
Agree	6	60,0
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.12. Do you agree that the tools, equipment and/or supplies listed for practical components of the curriculum (if applicable) are satisfactory for study programme delivery?

	Number	Percentage
Strongly agree	3	30,0
Agree	6	60,0
Neither agree nor disagree	1	10,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.13. Do you agree that the study programme objectives meet the level of the certificate?

	Number	Percentage
Strongly agree	2	20,0
Agree	7	70,0
Neither agree nor disagree	1	10,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.14. Do you agree that the learning resources (e.g., print media, audio-visual materials) provided for study programme delivery and to actively engage students are adequate?

	Number	Percentage
Strongly agree	2	20,0
Agree	8	80,0
Neither agree nor disagree	0	0,0

Disagree	0	0,0
Strongly disagree	0	0,0

8.15. Do you agree that the dual vocational training objectives were met?

	Number	Percentage
Strongly agree	2	20,0
Agree	6	60,0
Neither agree nor disagree	2	20,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.16. Do you agree that the dual vocational training prepares student for the future challenge in their working life?

	Number	Percentage
Strongly agree	4	40,0
Agree	5	50,0
Neither agree nor disagree	1	10,0
Disagree	0	0,0
Strongly disagree	0	0,0

8.17. How well do you evaluate collaboration between school and training partner?

	Number	Percentage
Extremely well	3	30,0
Very well	5	50,0
Somewhat well	2	20,0
Not so well	0	0,0
Not at all well	0	0,0

8.18. How do you evaluate students` theoretical training at vocational school?

	Number	Percentage
Very satisfied	4	40,0
Somewhat satisfied	5	50,0
Neither satisfied nor dissatisfied	1	10,0
Somewhat dissatisfied	0	0,0
Very dissatisfied	0	0,0

8.19. How do you evaluate students` practical training experience at training partner in a company?

	Number	Percentage
Very satisfied	6	60,0
Somewhat satisfied	2	20,0
Neither satisfied nor dissatisfied	2	20,0
Somewhat dissatisfied	0	0,0
Very dissatisfied	0	0,0

8.20. Overall, are you satisfied or dissatisfied with study programme?

	Number	Percentage
Very satisfied	5	50,0
Somewhat satisfied	5	50,0
Neither satisfied nor dissatisfied	0	0,0
Somewhat dissatisfied	0	0,0

Very dissatisfied	0	0,0

8.21. Could you name the main advantages of this study programme?

The skills students can pick up through a work-study program can directly impact their success later in life.

Good theoretical knowledge, practical training experience at training partner in a company

Good relationship between practice and theoretical knowledge

Wide range of modules for broad education. The balance between theory and practice.

Study programme is very modern and needed

Students` will have practical training experience at training partner in a company

8.22. Could you name the main disadvantages of this study programme?

No disadvantages

8.23. What changes would you recommend to improve this study programme?

To use more various modern teaching methods.

CONCLUSIONS

After implementation of the 1st year courses of study programme Business Management which was realized within the project „Three-level Centers of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy“ the following conclusions are defined:

1. Students are satisfied with the study programme content and teching quality. The overall assesment of the studies is high. According to the students:
   - the content was organized and easy to follow,
   - necessary academic literature and access to information sources was provided,
   - they gained enough theoretical knowledge, practical skills and were prepared for the future in the working life,

2. Teachers highly rated the study programme structure and description and are satisfied with study programme. According to the teachers:
   - study programme objectives meet the needs of the labour market and the level of the certificate,
   - the scope of the study programme is sufficient to achieve the study programe objectives, all modules are relevant to study programme and the assesment of modules is appropriate,
   - learning resources provided for study programme delivery and to actively engage students are adequate.

Co-funded by the Erasmus+ Programme of the European Union

Result 5.1
Dual Bachelor's Degree Programs

Piloting dual and trial study programs in Austria

Prepared by:

Institut für angewandte Gewerbeforschung der Wirtschaftskammer Österreich

Co-funded by the
Erasmus+ Programme
of the European Union

PILOT MODELS FOR A HIGHER VOCATIONAL QUALIFICATION BY MEANS OF INTERLOCKING AND PERMEABILITY OF ACADEMIC AND VOCATIONAL EDUCATION AND TRAINING PATHWAYS

IAGF - Institute for Applied Research of Skilled Crafts and Trades

Aimie Jung, BSc & DI Heidrun Bichler-Ripfel, IAGF

CONTENTS

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INSTITUT FÜR ANGEWANDTE GEWERBE FORSCHUNG

3LoE

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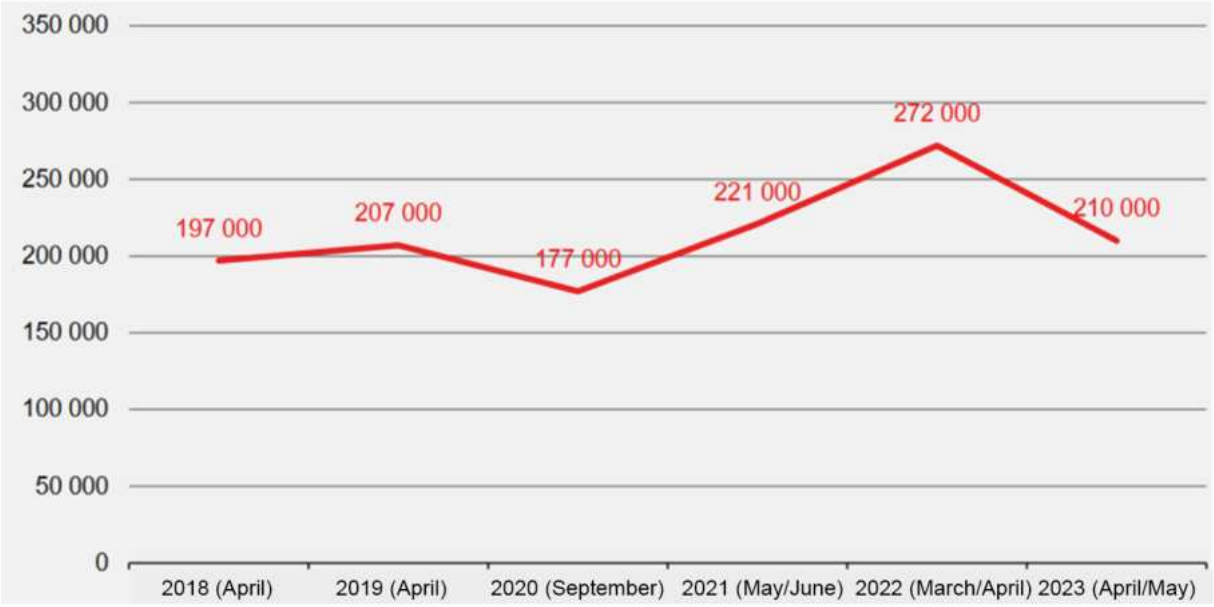
1. CHALLENGES AND GOALS

This report was produced as part of the 3LoE project, which aims to make vocational training more attractive in order to reduce the shortage of skilled workers. An important starting point is to improve the permeability of vocational and academic training.

In April/May 2023, the annual company survey was conducted in Austria on behalf of the Austrian Federal Economic Chamber. This "labor radar" shows that the shortage of labor and skilled workers in Austria remained at a very high level in April 2023, despite a slight decline since 2022. In relation to all member companies of the Austrian Federal Economic Chamber, there were around 210,000 vacancies for skilled workers. We must therefore continue to speak of an extraordinarily high shortage of labor and skilled workers, which is clearly noticeable in around 80% of Austrian companies and is likely to intensify in the coming years due to demographic trends (Dornmayr, 2023).



Sources:
ibw company survey on labor and skills requirements/shortage 2023 (n=5,124 companies, conducted April/May 2023)
ibw company survey on labor and skills requirements/shortage 2022 (n=3,936 companies, conducted March/April 2022)
ibw company survey on labor and skills requirements/shortage 2021 (n=4,272 companies, conducted May/June 2021)
ibw company survey on labor and skills requirements/shortage 2020 (n=4,431 companies, conducted in September 2020)
ibw company survey on labor and skills requirements/shortage 2019 (n=4,613 companies, conducted in April 2019)
ibw company survey on labor and skills requirements/shortage 2018 (n=4,462 companies, conducted in April 2018)

Figure 1: Development of vacancies for skilled workers in Austria (projection for all WKO member companies), (Dornmayr, 2023)

There are many reasons for the shortage of skilled workers. In addition to demographic changes, digitalization, higher and new qualification requirements due to climate change and the energy transition as well as new demands of the "digital natives", the younger generations in the working world, play a decisive role.

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1.1. GOALS AND TRENDS IN THE EDUCATION SYSTEM

The education system faces many challenges across the EU. If it wants to be successful, it must start with early childhood education and care, create equal conditions for all - regardless of socio-economic conditions, promote computer and information literacy as well as framework conditions that enable (working) adults to engage in lifelong learning. In order to achieve these goals, the European Commission's education strategy is targeting different levers: For example, both the rate of school leavers from general and vocational schools and the rate of educational opportunities attended by adults are to be increased. Increased practical learning in the workplace for vocational training graduates is also a goal, as is increasing the number of university graduates. This diverse approach to achieving objectives is based on the fact that education is subject to constant change. New forms and improvements in implementation and cooperation are therefore essential (European Commission, 2023).

1.2. MATRICULATION RATE AND UNIVERSITY ADMISSION

The school-leaving examination rate provides information on the number of school-leavers in relation to the population. This rate has increased significantly in Austria in recent years. Accordingly, 49.9% of young people of the usual graduation age of 18 and 19 successfully passed the school-leaving examination in the 2019/20 school year. In 1986/87, the school-leaving examination rate in Austria was still 24.9% (Statistics Austria, 2022).

Maturity examination rate[1)] by gender

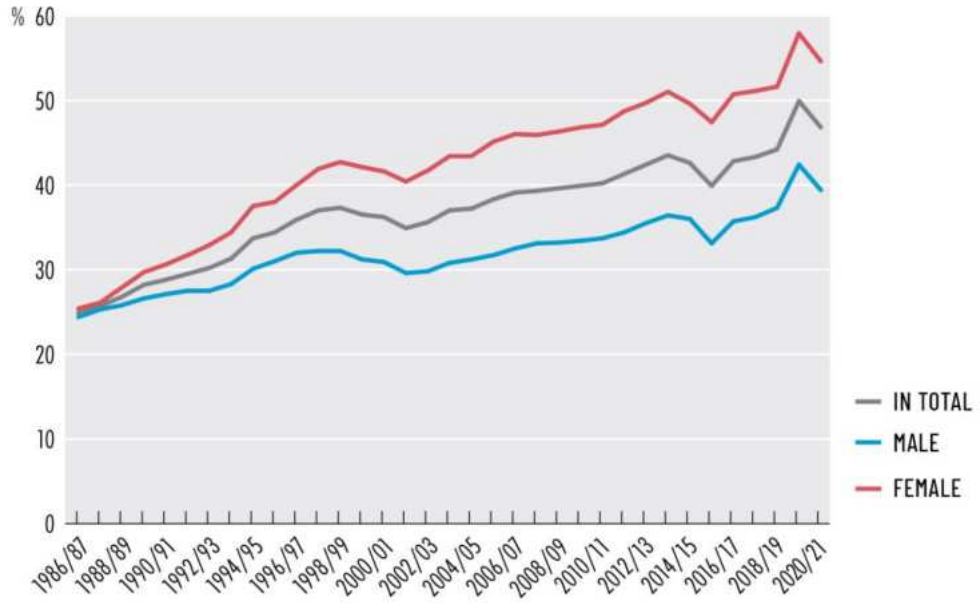

Figure 2: Matriculation rate by gender from the year 1986/87 to the year 2019/20 (Statistics Austria, 2022)1) Passed school-leaving examinations (excluding second or subsequent qualifications) measured by the arithmetic mean of the 18- and 19-year-old resident population.

In Germany, the number of school leavers with a higher education entrance qualification has also increased in recent years. Since the early 2000s, a constant number of approx. 80 - 85 % of school leavers with a higher education entrance qualification and 60 % of

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graduates with an entrance qualification for universities of applied sciences. The number of new university entrants has also risen continuously in Germany (Bertelsmann Foundation, 2015).

2. DEFINITIONS OF TERMS

The terms education and training, which describe the learning of content, are used differently in German-speaking countries.
The following is defined for this survey:

1. **TRAININGS**
    a. are present when a formal qualification is awarded at the end (state examination).
    b. Certain qualifications or requirements may be required to complete an apprenticeship (e.g. apprenticeship certificate, school-leaving certificate).

2. **VOCATIONAL TRAINING - INITIAL TRAINING AND TRAINING IN HIGHER VOCATIONAL EDUCATION AND TRAINING**
    a. Vocational training is available at various NQF levels (e.g. apprenticeship training at NQF4, training to become an NQF5 technical project manager, preparatory course for the NQF6 master craftsperson examination).
    b. Vocational training can lead to job-related authorizations (e.g. forklift license).

3. **ACADEMIC TRAINING**
    a. In order to complete an academic education, certain qualifications or requirements are usually required, such as a school-leaving certificate, vocational entrance examination or entrance or aptitude tests.
    b. Academic training generally takes place at accredited universities or universities of applied sciences.
    c. Academic training is available at various NQF levels such as Bachelor NQF6, Master NQF7 and PhD NQF8.

4. **FURTHER TRAINING**
    a. Further training is non-formal.
    b. Further training courses do not have a state examination qualification.
    c. Further education is anything that is not training (e.g. non-formal language courses, airbrush courses for graphic designers, etc.).
    d. Further training courses are not generally assigned to an NQF level.
    e. Further training can be complex and demanding.

5. **SCHOOL EDUCATION**
    This term refers to the location and type of teaching. In contrast to dual or practical vocational training, pupils learn knowledge and skills in a building, in a school. Apprentices, on the other hand, receive their vocational training in vocational schools and in companies. The theoretical part is generally higher in schools than the practical part, while the practical part is higher in practical vocational training.

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3. TRAINING SYSTEMS IN AUSTRIA

3.1. OUTLINE OF THE EDUCATION SYSTEM

Education systems in Europe are organized similarly everywhere. For example, there is compulsory education, which is intended to provide education for all - regardless of, for example, origin, status or religion. In Austria, compulsory education lasts nine years, usually starting at the age of six and ending at the age of fifteen. Regardless of which educational path someone takes, they have to go through a hierarchical system of stages that creates a gradual transition from basic education to secondary and tertiary education, as shown from left to right in Figure 3.

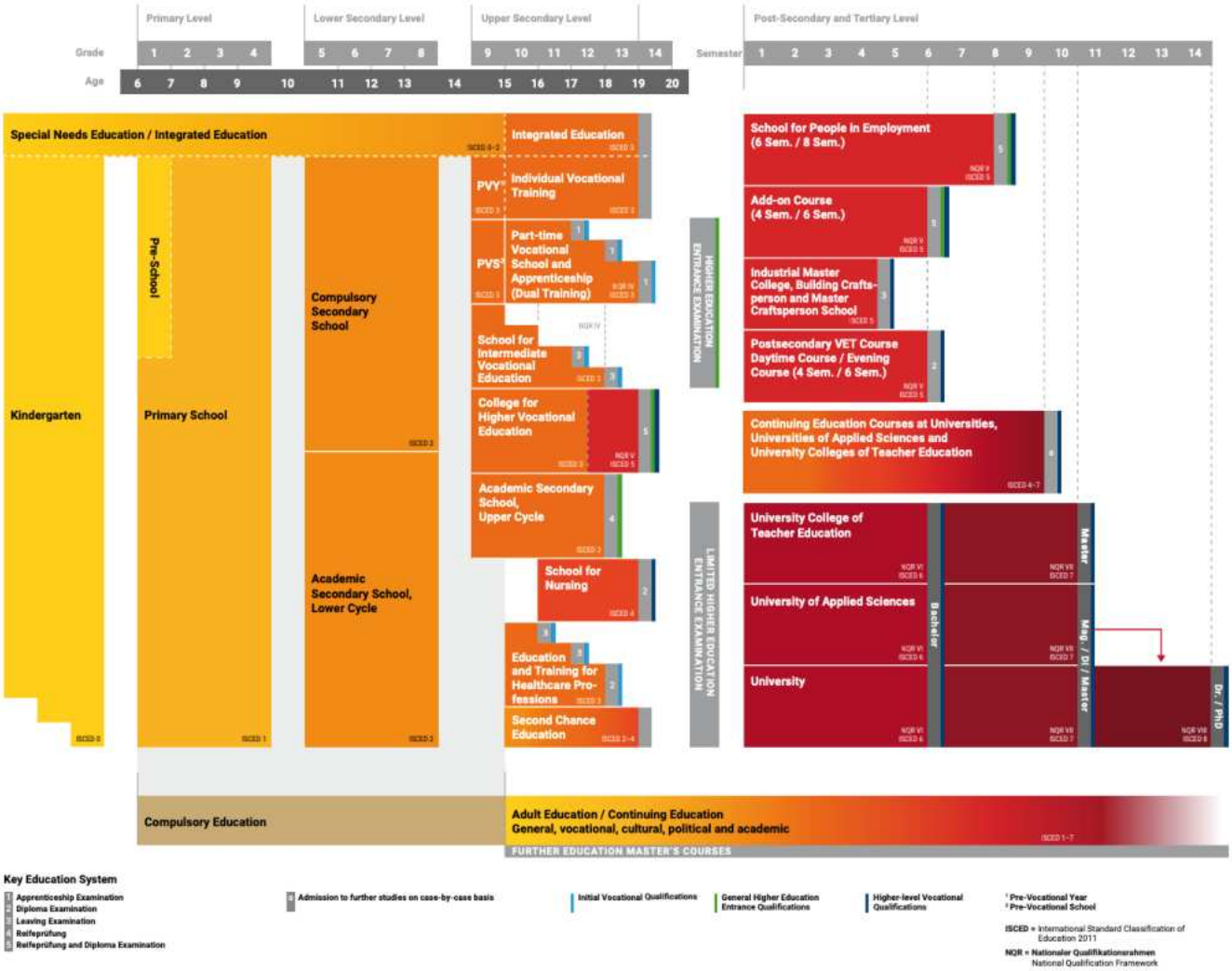

Figure 3: Education system in Austria (OeAD, 2024)

The distinction between school-based and work-based training is made primarily on the level of content, the attendance of one or more places where teaching and learning takes place and the focus on theory or practice. General secondary schools, for example, mainly offer theoretical full-time lessons in a school building. Practical vocational training as part of dual training, on the other hand, takes place both in a company and in a vocational school and the focus of this practical vocational training is on practical lessons. Mixed forms of school-based and practical training, such as higher technical schools in Austria, expand the range

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of training on offer. They combine theoretical and practical training as part of a school education.

With the creation of higher vocational education in Austria (National Council resolution in Dec. 2023), an equivalent, continuous vocational education was created in addition to a continuous academic education.

It is possible to switch between general, school-based and/or academic training and practical vocational training, particularly in the form of (entrance) examinations or examinations that entitle students to access higher education.

3.2. VOCATIONAL TRAINING IN AUSTRIA

In principle, vocational training in Austria can take one of two routes: the "dual system" or a school-based route. The aim of both training courses is to combine theory and practice. The biggest differences lie in the percentage of theoretical and practical lessons and in the fact that in the "dual system", in addition to lessons at a vocational school, the trainee also works in a company from the outset and is employed as an "apprentice" and thus integrated into everyday business life. In the school model, the student receives practical and theoretical instruction primarily at school. Depending on the school model, there are additional work placements of approx. 1 - 3 months, also in companies.

	SCHOOL	APPRENTICESHIP
Forms and duration	Vocational middle school (BMS): 3-4 years Vocational high school (BHS): 5 years Upper secondary level of a general secondary school (AHS): 4 years Upper secondary school (ORG): 4 years	Apprenticeship: 2-4 years Special forms: Apprenticeship with various training focuses Modular apprenticeship with basic module (usually 2 years), at least one main module (at least 1 year) and an optional special module (1/2 to 1 year)
Organization	School education: Teaching of theoretical knowledge, additional practical lessons and work placement	Training in the training company: Teaching of practical skills, additional theory lessons at vocational school
Prerequisites	Positive completion of grade 8* depending on grades and school sometimes Entrance examinations and aptitude tests	Completion of 9 years of compulsory schooling Positive completion of 8th and 9th grade is not absolutely necessary, but increases the chances of finding an apprenticeship
Registration or application	at the beginning of the 2nd semester of grade 8	in the 8th grade or at the beginning of the 9th grade
Income	No income during the training (remuneration during the internship is possible)	Apprentice compensation from the 1st year of apprenticeship
Conclusion	BMS: final examination and final certificate BHS: Matura and diploma examination AHS, ORG: Matura	Final apprenticeship examination
	*For BMS and BHS: except Latin, Geometric Drawing and compulsory subjects; AHS-Oberstufe and ORG: for exact requirements see website of the Federal Ministry of Education	

Figure 4: Vocational training in Austria (Public Employment Service Austria, Department of Labor Market Research and Vocational Information, 2022)

3.2.1. VOCATIONAL TRAINING AT SCHOOL

"School-based vocational training" generally takes place in a single (school) building, which usually also houses workshops for practical lessons. The focus of the training is on theoretical and technical instruction. Practical instruction usually takes place in in-house workshops run by specialist teachers. The ratio between theoretical and practical lessons is usually 4:1, i.e.

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four days to one day with a five-day school week and an additional work placement of approx. 1 - 3 months.

SCHOOL FOR INTERMEDIATE VOCATIONAL EDUCATION (BMS)	
Prerequisite	Successful completion of grade 8 (see also § 28 para. 3 SchUG). **(Federal Ministry of Education, Science and Research, 2023)**; Certificates: Grades/performance level
Duration	three to four years (age: approx. 15 - 18 years)
Costs	Public schools: none; private schools: yes, different
Qualification	NQF 3 - training duration of 1 - 2 years -> previous vocational training; NQF 3 to 4 - training duration of 3 - 4 years and with final examination -> completed initial vocational training

COLLEGE FOR HIGHER VOCATIONAL EDUCATION (BHS)	
Prerequisite	Successful completion of grade 8 (see also § 28 para. 3 SchUG). (Federal Ministry of Education, Science and Research, 2023); Certificates: Grades/performance level
Duration	5 years (age: approx. 15 - 19 years)
Costs	Public schools: none; private schools: yes, different
Qualification	NQF5 - (technical) Matura ("school leaving examination"), immediate entry into working life possible, as well as attending a degree course.

3.2.2. DUAL VOCATIONAL TRAINING

Dual vocational training in Austria is called "apprenticeship" and takes place at 2 locations:

1) **In a training company:** This is a company where the person undergoing training (the apprentice) learns the chosen profession in theory and practice as part of the company's everyday working life.
2) **At a vocational school:** Together with other apprentices on the same course, the apprentice attends vocational school during the working week (also organized as block teaching). During these lessons, apprentices acquire both general and additional specialist knowledge.

Apprentices spend around 80 percent of their training at the training company and 20 percent at vocational school (Company Service Portal Austria, 2023).

There are currently around 250 apprenticeships in Austria, e.g. to be found on the list of apprenticeships from A to Z of the Federal Ministry of Labour and Economy: https://www.bmaw.gv.at/Themen/Lehre-und-Berufsausbildung/lexicon.html

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Overview - Dual training/apprenticeship

Prerequisite	**At least compulsory school leaving certificate (9 years);** Conclusion of an apprenticeship contract with a company (training company)
Duration	two to four years (age at the beginning: approx. 15 - 16 years)
Costs	none
Earnings	From the 1st year of apprenticeship (amount staggered according to years of apprenticeship)
Qualification	NQF4 - Final apprenticeship examination (LAP); NQF4 - Additional Matura ("school leaving examination") qualification (apprenticeship with Matura) enables access to higher education;

After completing their apprenticeship, graduates achieve the status of a journeyman or journeywoman and have the opportunity in Austria to immediately continue training for a master craftsman's certificate, to continue working in the same company as a skilled worker or to continue their education, for example as part of an NQF5 specialization and thus deepen their basic knowledge in a specialist area.

An apprenticeship can also be combined with a "Matura" qualification ("school leaving examination"). In Austria, apprentices who have completed an "apprenticeship with Matura" are entitled to attend a university. In order for companies to be allowed to train apprentices, they must fulfill legal requirements according to BAG - §3 Vocational Training Act. This applies, for example, to a valid trade license as well as the completion of a trainer examination or the appropriate equipment and management of a workshop for an apprenticeship.

Two checklists, one for a company as a prospective training company and one for a prospective apprentice, explain the necessary steps to be taken:

CHECKLIST - APPRENTICE COMPANY

Guide - What to do if a company wants to train apprentices in Austria:

Before the apprenticeship

1. **Apply for training authorization (application/notification of assessment)**
   The company must apply to the relevant apprenticeship office of the Economic Chamber in the respective federal state for an assessment notice.
   https://www.wko.at/lehre/lehrlingsstellen-wirtschaftskammern

   An online guide from the Austrian Federal Economic Chamber (WKO) informs companies about the special features of the professions and requirements in the respective federal state: wko.at Online Beratung

2. **Own (apprentice) "trainers" in the company**
   At least one employee must have completed a trainer examination in order to be allowed to train apprentices. A trainer may train a maximum of 5 apprentices to ensure high-quality training.

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3. **Register the vacant apprenticeship position in the apprenticeship exchange of the Public Employment Service Austria (AMS) and the Austrian Federal Economic Chamber (WKO).**

4. **Apprenticeship vacancy**
   Apprenticeship companies can use various portals to advertise their apprenticeships, such as the WKO apprenticeship exchange:
   https://www.wko.at/lehre/lehrstellenboerse

5. **Registration with the social insurance before the start of the apprenticeship**

6. **Hiring the apprentice - Apprenticeship contract**
   Conclude an apprenticeship contract (see below: Apprenticeship checklist)

During the apprenticeship

1. **Registration of the apprentice at the vocational school (within 2 weeks of the start of the apprenticeship)**

2. **Training during the apprenticeship**
   Only persons who have the appropriate trainer qualification may train apprentices (max. 5 apprentices per trainer).

3. **Funding opportunities**
   In Austria, there are various subsidies for training companies and apprentices that support the dual system. This includes general funding such as project funding for innovative projects relating to integration, gender and quality, as well as 100% funding for the final apprenticeship examination.

At the end of the apprenticeship

1. **Final apprenticeship examination**
   At the end of the apprenticeship period, apprentices can take a final apprenticeship examination (LAP) at level 4 of the National Qualifications Framework on a voluntary basis.

2. **Additional qualifications**
   In order to make a company more attractive to apprentices, some companies offer additional qualifications with the final apprenticeship examination, such as specializations in NQF 5 or the opportunity to take preparatory courses for the master craftsman or qualification examination.

APPRENTICE CHECKLIST

Guide on what to do if I want to complete an apprenticeship in Austria:

1. **Check interests & career opportunities**
   Think about what you are particularly interested in and what you find particularly easy. If you are not sure, use career choice and/or interest tests to help you decide on a career, e.g. under:
   https://www.ams.at/arbeitsuchende/topicliste/berufsinteressentest

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Career choice test - Free career test | Apprenticeship portal:
https://www.lehrstellenportal.at/berufswahltest/

2. **Check vocational training in Austria**
   Official lists of possible apprenticeships provide an overview:
   Find career information " quick & easy | AMS:
   https://www.ams.at/arbeitsuchende/aus-und-weiterbildung/berufsinformationen

   List of apprenticeships from A-Z:
   https://www.bmaw.gv.at/Themen/Lehre-und-Berufsausbildung/lexicon.html

3. **Check open apprenticeships!**
   Austria has its own apprenticeship portal for this purpose, where you can search for apprenticeship vacancies by place of residence or type of occupation, e.g. at the apprenticeship portal:
   Apprenticeships in Austria: Apprenticeship 2024 & 2025 | Apprenticeship portal

   Or Lehrberuf.info:
   Search for an apprenticeship on Austria's largest apprenticeship portal | Lehrberuf.info

4. **Apply for an apprenticeship!**
   Send your application to companies that have advertised an apprenticeship. You can also send an unsolicited application to the company of your choice. It is important to make sure that the company is authorized to train apprentices. An application usually includes a letter of application or motivation, a CV and certificates. Ideally, you should tailor your application to the company in question.

5. **Conclude an apprenticeship contract**
   The apprenticeship contract is an employment contract between the training company and the apprentice. It must contain the following points (apprenticeship contract - WKO: https://www.wko.at/lehre/lehrvertrag):
   i. Personal data of the apprentice
   ii. Data of the authorized instructor and the training company
   iii. Description of the apprenticeship occupation according to the list of apprenticeship occupations
   iv. Duration of the apprenticeship
   v. Start and end of apprenticeship training
   vi. Reference to the apprentice's vocational training obligations
   vii. Proof of the apprentice's existing training periods
   viii. Amount of apprentice compensation per apprenticeship year
   ix. Date of conclusion of the contract

6. **Register for vocational school**
   To complete the theoretical part, your training company must register you at a vocational school within two weeks of starting your apprenticeship.

7. **Start and complete an apprenticeship (approx. 2 - 4 years)**
   Practical and theoretical learning at vocational school and in the training company.

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8. **Apprenticeship certificate**
   Every apprentice can complete their apprenticeship with a final apprenticeship examination (LAP). To do so, the apprentice must submit an application to the relevant apprenticeship office of the Economic Chamber (Register apprentice: Apprenticeship offices of the WKO: https://www.wko.at/lehre/lehrlingsstellen-wirtschaftskammern).

4. HIGHER VOCATIONAL TRAINING IN TRANSITION

Austria has a long tradition and history of keeping a vocational and an academic educational pathway strictly separate, but is also increasingly working to increase the attractiveness of vocational higher education and improve the permeability between the two educational pathways.

A study conducted by the Federal Ministry of Labour and Economy in 2022 shows that fewer and fewer young people have embarked on dual vocational training since 2010.

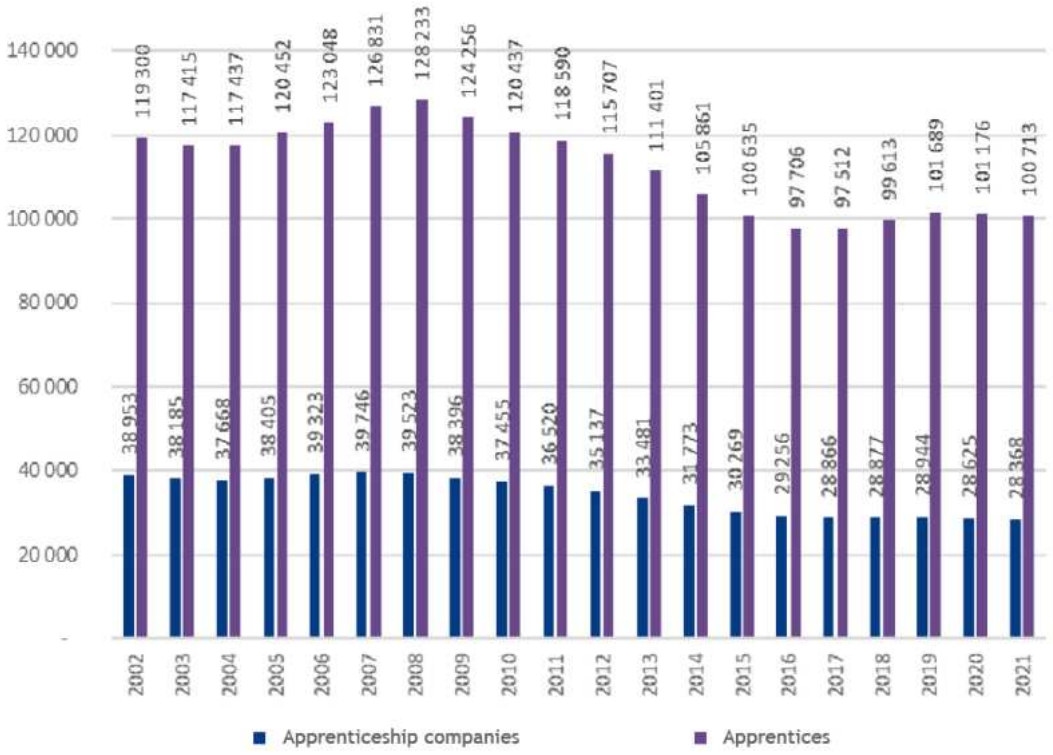

Figure 5: Development of the number of training companies and apprentices (excluding inter-company training) since 2002 (Federal Ministry of Labour and Economy , 2022)

At the same time, student numbers continued to rise. Fewer prospects or opportunities in the training system had led to the dual system becoming increasingly unattractive for many.

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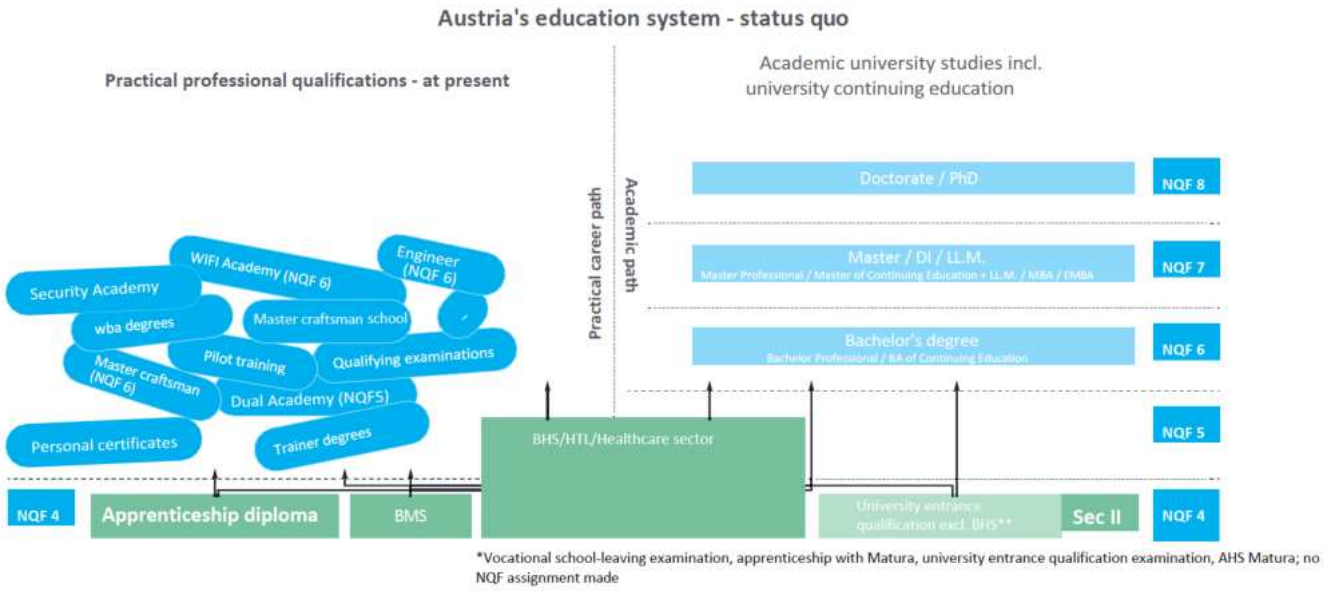

Figure 6: Gapy, informal dual vocational training versus continuous academic education (WKO, Höhere Berufliche Bildung, Eigenverlag Wien, as of May 2023)

There was a pull towards academic education, as shown in Figure 7.

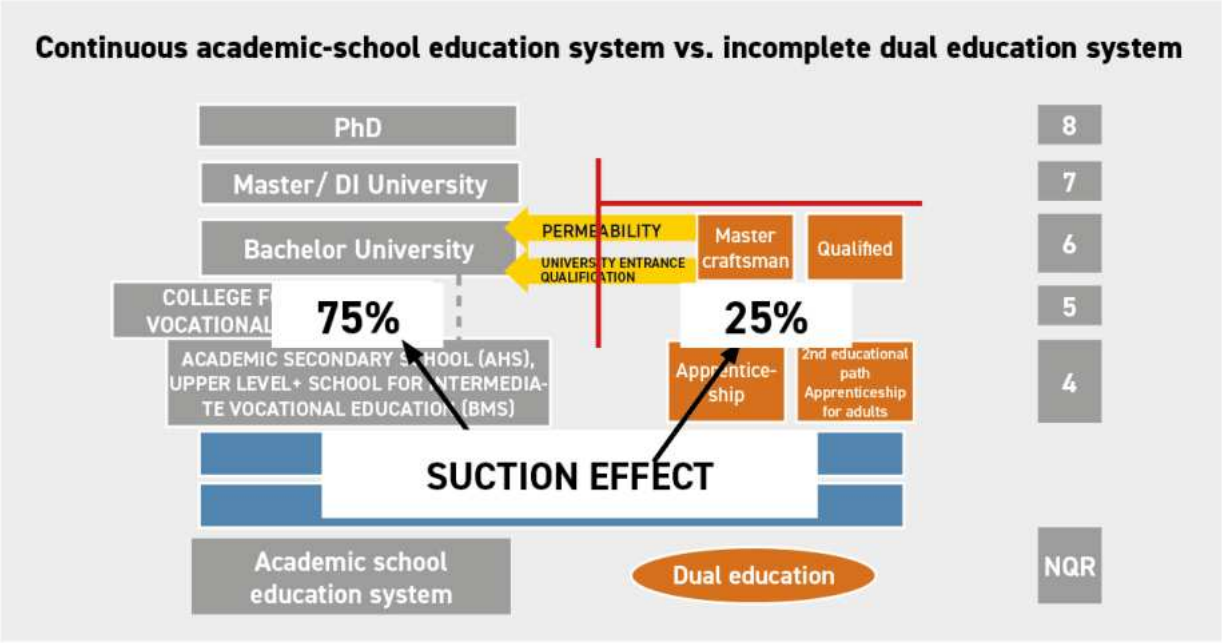

Figure 7: Impact of impermeable practical vocational training by 2023 in Austria (WIFI Tirol, 2023)

Gradually, attempts were made to make vocational training more attractive, primarily by creating new links between academic and vocational training, as the following examples show:

HORIZONTAL link between academic and vocational training

- **"Apprenticeship with Matura", vocational baccalaureate**

In Austria, it is possible to complete the Matura during the apprenticeship. The vocational baccalaureate consists of four partial examinations: German, mathematics, a living foreign

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language and a subject area (Austrian Federal Economic Chamber, 2023). There are no costs for the apprentice for the preparatory courses, course materials and examinations because the Federal Ministry of Education, Science and Research finances up to 900 teaching units per apprentice (Federal Ministry of Education, Science and Research, 2023).

- **University entrance examinations**

People without a traditional school-leaving certificate have the opportunity to gain access to universities through a university entrance qualification examination.

- **Vocational colleges (BHS):**

BHS offer both theoretical and practical vocational training. Graduation with a vocational (Matura) qualification enables graduates to enter the world of work immediately and to attend university.

- **Individual solutions**

One way of combining vocational and academic education is for school leavers with higher education entrance qualifications who first complete vocational training and then go on to study. It is also possible for graduates to follow the reverse route and complete vocational training. However, this connection takes a long time and is often associated with multiple repetitions of what has been learned.

VERTICAL extension of (higher) vocational training

- **Higher vocational education NEW (HBB)**

The unanimous passing of the Higher Vocational Education and Training Act by the National Council on December 14, 2023 is considered a milestone in the history of vocational education and training in Austria. In addition to a continuous academic university education, this enables the creation of an equivalent continuous practical vocational education and training (see chapter 4.2). The gap between the final apprenticeship examination (NQF4) and the master craftsperson examination (NQF6) has thus been closed.

4.1. PREVIOUSLY ONLY NQF6: MASTER CRAFTSMAN EXAMINATION - QUALIFICATION EXAMINATION - FOREMAN EXAMINATION

Prerequisite	Minimum age of 18 years
Duration	individual, attendance of preparatory courses optional
Costs	Free of examination fees from July 1, 2023
Qualification	Master craftsman's certificate on NQF 6

Anyone who is 18 years old in Austria may take a master craftsman's examination. There are no further requirements in Austria. However, most candidates usually take preparatory courses or have completed an apprenticeship and/or have several years of practical experience in order to actually pass a master craftsman examination. The master craftsman examination centers of the Economic Chamber conduct the master craftsman examinations. These generally consist of five parts ("modules"). The order in which the modules are taken is freely selectable. A module certificate is issued for each successfully completed module.

Module 1 is a project-oriented technical-practical examination. It consists of Part A (proof of technical skills at apprenticeship certificate level) and Part B (proof of the technical and

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practical knowledge and skills required for business management, in particular organizational, planning, technical and executive skills). Part A is intended for those who do not yet have an apprenticeship certificate; this part is not required if a final apprenticeship examination has been passed.

Module 2 is a technical oral examination. It also consists of Part A (proof of professionalism in the subject-oriented area based on a typical professional example) and Part B (presentation of skills in management, quality management and, if applicable, safety management), whereby Part A is also omitted here if a final apprenticeship examination has been taken.

Module 3 is a technical and theoretical written examination, which must be at least five hours long. Here, the person taking the examination provides evidence of technical, planning, calculation and costing knowledge at a higher technical level.

Module 4 contains the trainer examination. It is not required if an equivalent examination has been successfully passed or if the trainer course or training equivalent to the trainer course has been completed or if a transitional provision in the law provides for this.

Module 5 consists of the entrepreneur examination, which can be replaced by various training courses/examinations taken (e.g. HAK (Commercial School), HTL (Technical upper-level secondary school), final apprenticeship examination in a commercial apprenticeship, commercial school). If a subject is assessed negatively, only this subject must be repeated (oesterreich.gv.at, 2023).

If the candidate has successfully completed all module examinations, the master craftsman examination board issues an overall certificate. With this certificate, the graduate is authorized to call him/herself a "Meisterin"/"Meister" (master craftsperson) of the respective craft and to use this title before his/her name in short form ("Mst."; "Mst.in") or in full and to have it entered in public documents. Master craftsmen may designate their business premises as "Meisterbetrieb" and may use the "Meisterbetrieb" seal of approval.

The completed master craftsman's examination is classified at qualification level 6 in the National Qualifications Framework.

4.2. NEW NQF5 TO NQF7: HIGHER VOCATIONAL EDUCATION AND TRAINING

Prerequisite	Depending on the "examination regulations", different regulations apply, such as an apprenticeship or master craftsman's certificate, comparable professional experience or much more.
Duration	different
Costs	different
Qualification	NQF5 - Higher Professional Qualification (HBQ) /Extended Professional Qualification
Qualification	NQF6 – „Specialized diploma“ / Professional Diploma
Qualification	NQF7 - Higher Professional Diploma (HFD) / Advanced Professional Diploma

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On December 14, 2023, the Austrian National Council passed the Higher Vocational Education and Training Act. The introduction of a continuous practical vocational training system has closed previous gaps in vocational training in Austria and expanded. Until now, the focus of the dual system has been on the apprenticeship certificate (LAP) at NQF level 4 and the master craftsman or qualifying examination at NQF level 6.

The gap between the apprenticeship certificate and master's degree has been closed by creating new training qualifications at NQF level 5. NQF 5 training courses offer journeymen and women the opportunity to expand or deepen their knowledge and skills in a specific field in the respective specialist area. Automotive technicians, for example, will have the opportunity in future to continue their training and specialize in the field of high-voltage technology, while journeyman chimney sweeps will be able to specialize in fire protection and supply technology. Higher specialist diplomas at NQF level 7 should in turn enable master craftsmen and holders of qualifying examinations to undertake further training in their specialist area.

From 2024, the new practical vocational training system should be on an equal footing with academic training and offer an attractive career path throughout.
From the start of training, the practical vocational education system now offers future graduates more opportunities and prospects for professional and personal development. The basis for the implementation of the practical vocational education system was the resolution of the Higher Vocational Education Act (HBB), which comes into force on May 15, 2024.

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5. PILOT MODELS FOR A HIGHER VOCATIONAL QUALIFICATION BY MEANS OF INTERLOCKING AND PERMEABILITY OF ACADEMIC AND VOCATIONAL EDUCATION AND TRAINING PATHWAYS

The interlocking and permeability of vocational and academic education in Austria is an essential component of the education system, which aims to facilitate the transition between different educational pathways and at the same time make the individual educational pathway more flexible and meet the requirements of the Austrian market. In the Austrian education system, this concerns pupils, students, apprentices and working people on the one hand, and educational institutions such as schools and universities, but also (training) companies and (training) workshops on the other.

Graduates of a general or vocational secondary school, (technical) high school graduates, have the opportunity to obtain higher qualifications as part of an academic education and to move up the career ladder. Until recently, graduates of an apprenticeship certificate (LAP), journeymen, could only formally obtain a higher qualification through a master craftsman's examination and thus reached the end of their formal educational career.

The differentiation of the higher education sector, especially the universities of applied sciences, and not least as a result of the Bologna reform, led to an increase in the importance of vocationally oriented academic courses.

In this chapter, we present a selection of different examples from practice that offer higher vocational training from NQF level 5 and combine academic training with practice-oriented vocational training.

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*AHS= ACADEMIC SECONDARY SCHOOL, UPPER LEVEL

**BHS= SCHOOL FOR INTERMEDIATE VOCATIONAL EDUCATION

HIGHER EDUCATION/ FACILITY	PREREQUISITE	DURATION	COSTS FOR THE STUDENT	QUALIFICATION	LOCATION
Pilot: Dual Academy - vocational qualification on NQF 5					
Dual Academy	AHS* or BHS** high school diploma	2 to 3 years	none	Apprenticeship qualification at NQF 4 and an additional qualification at NQF 5 Certification "DA Professional"	AT
University degree (NQF6) with professional practice Practice-integrated dual study program					
Baden-Württemberg Cooperative State University (DHBW)	AHS* or BHS** high school diploma or other university entrance qualification	3 years	proportionate contributions to administrative costs and student union. Varies depending on location, between € 250 - 350 per semester	Bachelor's degree on NQF6	GER
IU - International University	AHS* or BHS** high school diploma or other university entrance qualification	Full-time studies (3 years) or part-time I (4 years) and part-time II (6 years)	none	Bachelor's degree on NQF6	GER
Peek & Cloppenburg KG	AHS* or BHS** high school diploma or other university entrance qualification	3 years	none	Bachelor's degree on NQF6	AT
MCI - Management Center Innsbruck	AHS* or BHS** high school diploma or other university entrance qualification	3 years	Statutory ÖH (Austrian Students' Union) contribution	Bachelor's degree on NQF6	AT

Career-integrated or part-time dual study program

FH Salzburg	AHS* or BHS** high school diploma or other university entrance qualification	3 years	€ 363.36 per semester plus ÖH fee	Bachelor's degree on NQF6	AT
FH Kufstein Tyrol	AHS* or BHS** high school diploma or other university entrance qualification	3 years	€ 363.36 per semester plus ÖH fee	Bachelor's degree on NQF6	AT

University degree and professional qualification - double degree
Dual study program - training-integrated study or study-integrated training

Hamburg University of Cooperative Education (BHH)	University entrance qualification	3 to 4 years	Administrative fee of € 50,- per semester and contribution to the student council	Vocational qualification at NQF4 and Bachelor's degree at NQF6	GER
Bavarian universities	University entrance qualification or subject-specific entrance qualification	4.5 years	Semester fees and material purchase costs plus basic contribution to the student union	Vocational qualification at NQF4 and Bachelor's degree at NQF6	GER
Universities in North Rhine-Westphalia	University entrance qualification	4 years	Dependent on university, training company participates	Vocational qualification at NQF4 and Bachelor's degree at NQF6	GER
FH Carinthia	University entrance qualification	3 years	€ 363.36 per semester plus ÖH fee	Vocational qualification at NQF4 and Bachelor's degree at NQF6	AT
FH Campus Vienna	University entrance qualification	3 years	none	Vocational qualification at NQF4 and Bachelor's degree at NQF6	AT
FH St. Pölten	University entrance qualification	3 years	€ 363.36 per semester plus ÖH fee	Vocational qualification at NQF4 and Bachelor's degree at NQF6	AT

Three degrees = Trial study program

Fachhochschule des Mittelstands (FHM) and Niederrhein University of Applied Sciences	University entrance qualification	5 years	The tuition fees depend on the respective training occupation and the study location	Vocational qualification at NQF4, master craftsman's certificate at NQF6 and Bachelor's degree at NQF6	GER

5.1. PILOT: DUAL ACADEMY - VOCATIONAL QUALIFICATION ON NQF 5

Prerequisite	Academic Secondary School (AHS) or School for intermediate vocational education (BHS) high school diploma
Duration	2 to a maximum of 3 years
Costs	The training company covers the costs and you receive a training allowance
Qualification	Apprenticeship qualification at NQF 4 and an additional qualification at NQF 5 "DA Professional" certification

A new offer has been available in Upper Austria since 2018 and throughout Austria since 2022: The Dual Academy. https://www.dualeakademie.at/

Here, participants can undergo tailor-made, practice-oriented training that qualifies them for careers as specialists and managers in future-oriented professions. Successful completion of the "Dual Academy Trainee Program" includes, in addition to the subject-specific apprenticeship qualification, the completion of future skills, a completed internship abroad and an assessed future project. After one year of practical experience following completion of the trainee program, it is possible to obtain the NQF 5 certification "DA Professional". This certification ranks below a Bachelor's degree, which is at NQF 6. An AHS or BHS high school diploma is required to participate in this program.

5.2. UNIVERSITY DEGREE (NQF6) WITH PROFESSIONAL PRACTICE

All persons who have a higher education entrance qualification, such as a Matura or a university entrance qualification, have the opportunity to study at a university in Austria. Persons without a higher education entrance qualification with a relevant vocational qualification and persons with a German entrance qualification for universities of applied sciences must take additional examinations in Austria in order to meet the admission requirements.

After successfully completing a Bachelor's degree at NQF 6, people who follow an academic education pathway have the opportunity to add a Master's degree at NQF 7 in 2 years. The highest qualification that can be achieved is a doctorate/PhD at NQF 8.

Universities are increasingly trying to incorporate practical training into their curricula. The boundary between vocational and academic training is becoming blurred. In this chapter, we present a selection of university courses that are breaking new ground and increasingly integrating practical training.

5.2.1. PRACTICE-INTEGRATED DUAL STUDY PROGRAM

Prerequisite	Academic Secondary School (AHS) or School for intermediate vocational education (BHS) high school diploma or other university entrance qualification
Duration	3 years
Costs	different
Qualification	Bachelor's degree on NQF6

The practice-integrated dual study program combines a Bachelor's degree with integrated practical phases. In other words, it is a course of study in which there are always longer practical phases in a company. It is also possible for the student to be employed by the company for a few hours a week alongside their studies.

A practice-integrated dual study program ends with a Bachelor's degree at university level, but not with a vocational qualification, and lasts 3 to 4 years. It is shorter than the training-integrated dual study program, but you only obtain one degree, not two. The advantage lies in gaining practical experience in a company during the course, which increases the chances of continuing to work in the training company after graduation. The prerequisite for a practice-integrated degree course is a university entrance qualification.

5.2.1.1. BADEN-WÜRTTEMBERG COOPERATIVE STATE UNIVERSITY

Prerequisite	Academic Secondary School (AHS) or School for intermediate vocational education (BHS) high school diploma or other university entrance qualification
Duration	3 years
Costs	No tuition fees, but pro rata contributions to administrative costs and student union Varies depending on location, between € 250 - 350 per semester
Qualification	Bachelor's degree on NQF6

This type of practice-integrated dual study program has been around for over 40 years. The Baden-Württemberg Cooperative State University (DHBW) is therefore considered the "inventor" of the dual study program. The DHBW now offers over 30 dual study programs: https://www.dhbw.de/studienangebot/bachelor#course-0

At the DHBW, theoretical and practical phases alternate. Students spend the theoretical phases at one of the DHBW locations in Baden-Württemberg. The practical phases are spent at the respective partner company (dual partner) that cooperates with the DHBW. The DHBW cooperates with over 9,000 companies and institutions so that students can complete the practical phases anchored in their studies. The cooperating companies include global corporations as well as regional companies.

The Bachelor's degree program at the DHBW lasts three years. Students are also employees of a dual partner and receive a monthly salary throughout their studies. They gain professional experience and are financially independent.

In order to study at the DHBW, a university entrance qualification is required. You also need a study contract that is agreed with the dual partner in order to take up a Bachelor's degree

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course. The application is not made to the DHBW, but directly to the partner company participating in the practice-integrated dual study program. Anyone who receives a practical placement at a partner company automatically acquires a study place at the DHBW.

5.2.1.2. IU - INTERNATIONAL UNIVERSITY

Prerequisite	Academic Secondary School (AHS) or School for intermediate vocational education (BHS) high school diploma or other university entrance qualification
Duration	Full-time studies (3 years) or part-time I (4 years) and part-time II (6 years)
Costs	No costs for students, tuition fees are paid by the practice partner
Qualification	Bachelor's degree on NQF6

It is also possible to study dual study programs at the IU. https://www.iu-dualesstudium.de/

Here, study and practice are optimally combined. The student completes the theoretical courses at the IU and the practical phases in a company that cooperates with the IU. In this way, the student not only has a recognized Bachelor's degree at the end, but also 3.5 years of professional experience.

The special thing about the dual study program at IU is that you can also complete the theory online virtually and from any location, in addition to the option of studying at one of the more than 30 IU university locations throughout Germany. The practical part takes place at one of the local partner companies.

The dual study program at the IU is organized on a weekly basis: one half of the week is dedicated to studying, the other half, i.e. approx. 20 hours, to the practice partner. The student therefore does not work on the side, but the work is an integral part of the course. Theoretical courses at the IU and practical phases in the company are optimally linked.

5.2.1.3. PEEK & CLOPPENBURG KG - DUAL STUDY PROGRAM

Prerequisite	Academic Secondary School (AHS) or School for intermediate vocational education (BHS) high school diploma or other university entrance qualification
Duration	3 years
Costs	are carried by Peek und Cloppenburg KG
Qualification	Bachelor's degree at NQF6 level (Bachelor of Arts (B.A.) in Business Administration or Bachelor of Science (B.Sc.) in Business Psychology)

Practice-integrated studies are also offered in Austria, including at Peek und Cloppenburg KG: https://karriere.peek-cloppenburg.at/lehre-und-studium/duales-studium-retail

It is planned that practical phases in sales in one of the Peek & Cloppenburg stores will alternate with the course of study. In addition to working in sales, the student will also get to know the areas of decoration, administration and goods handling.

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The student is employed full-time, but only works 30 hours per week in sales. The remaining hours are earmarked for studies (paid time off). This is completed at the SRH University of Applied Sciences and the student can choose between two courses: Business Administration & Management or Business Psychology. The course is a distance learning course. However, the examinations take place at the study center in Vienna.

The student receives a fixed monthly salary from the start, which increases with each year of training. The training costs are also covered by the company.

5.2.1.4. MCI - BACHELOR IN SMART BUILDING TECHNOLOGIES

Prerequisite	Academic Secondary School (AHS) or School for intermediate vocational education (BHS) high school diploma or other university entrance qualification
Duration	3 years
Costs	Statutory ÖH contribution
Qualification	Bachelor on NQF6 (Bachelor of Science in Engineering)

MCI, the Management Center Innsbruck, offers a practice-integrated dual study program in Innsbruck: https://www.mci.edu/de/studium/bachelor/smart-building-technologies

In the "Smart Building Technologies" degree course, students have to complete both a study phase at MCI and a practical phase at a partner company each semester. In this way, theory and practice are combined throughout the course. Students thus gain relevant professional experience and can apply the knowledge they have learned at the university in the company during the practical phases, as they are employed by the company for the entire year. Students receive a fixed salary every month throughout the year - regardless of whether they are currently in a study phase at MCI or in a practical phase at the company.

Although this course picks up on content from apprenticeships, it does not replace vocational training. This means that students only receive a Bachelor's degree after completing their training and not a vocational qualification.

The prerequisite for admission to the course is a higher education entrance qualification or a relevant vocational qualification if either a relevant vocational training course or a relevant vocational secondary school has been successfully completed.

5.2.2. CAREER-INTEGRATED OR PART-TIME DUAL STUDY PROGRAM

The work-integrated or part-time dual study program is aimed at people who have already completed vocational training and would like to continue their education in a specific subject area. Here, work is combined with a course of study that should be related to the subject matter.

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This course lasts 3 to 4 years. You study in addition to working part-time in a company. The study period is divided into days or blocks. Employment in a company is a prerequisite for the course.

Some degree courses offer a master craftsman qualification as part of the dual study program. Other courses, on the other hand, already require a master craftsman's degree in order to start this dual study program. The course is also often agreed with the employer and the student receives support from the company, for example in the form of time off for examinations.

There are a large number of options for dual study programs that can be integrated into a career or can take place alongside a career, whether in the form of a distance learning program or one with attendance times. An increasing number of universities and universities of applied sciences are also offering part-time courses. What they have in common is that work in a company is combined with a course of study and the content must therefore be related.

5.2.2.1. BACHELOR'S DEGREE IN BUSINESS ADMINISTRATION AT THE FH SALZBURG

Prerequisite	Academic Secondary School (AHS) or School for intermediate vocational education (BHS) high school diploma or other university entrance qualification
Duration	3 years
Costs	€ 363.36 per semester plus ÖH fee
Qualification	Bachelor on NQF6 (Bachelor of Arts in Business (BA))

One example of a degree course that is also offered alongside work is the Business Administration degree course at Salzburg University of Applied Sciences: https://www.fh-salzburg.ac.at/studium/bt/betriebswirtschaft-bachelor

Here, the course is organized as attendance studies and is completed on Friday afternoons and Saturdays, while there is also one block week per semester. The degree is awarded after 6 semesters with a Bachelor of Arts in Business (BA). The statutory tuition fee of € 363.36 per semester plus the ÖH contribution must be paid. The following also applies here: in order to be able to study at the Salzburg University of Applied Sciences, a university entrance qualification is required (e.g. in the form of a completed Matura or a relevant professional qualification including additional examinations).

5.2.2.2. BACHELOR'S DEGREE PROGRAM IN MARKETING & COMMUNICATION MANAGEMENT AT THE FH KUFSTEIN TIROL

Prerequisite	Academic Secondary School (AHS) or School for intermediate vocational education (BHS) high school diploma or other university entrance qualification
Duration	3 years
Costs	€ 363.36 per semester plus ÖH fee
Qualification	Bachelor on NQF6 (Bachelor of Arts in Business (BA))

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At the University of Applied Sciences Kufstein Tirol, you can also study some degree courses part-time, such as the Bachelor's degree course in Marketing & Communication Management: https://www.fh-kufstein.ac.at/studieren/bachelor/marketing-kommunikationsmanagement-bb

The Bachelor's degree course in Marketing & Communication Management with its blended learning approach, with around 30% eLearning, is also ideally organized as a part-time course because you don't always have to travel to the learning location.

You will graduate after 6 semesters with a Bachelor of Arts in Business (BA) and pay the statutory tuition fee of € 363.36 per semester plus the student union fee. Prerequisite is a university entrance qualification such as the general higher education entrance qualification, the completion of at least 3 years of vocational secondary school or training in the dual system (relevant apprenticeship) with additional examinations within the first semesters in the subjects Mathematics, German and English at Matura level.

5.3. UNIVERSITY DEGREE AND PROFESSIONAL QUALIFICATION - DOUBLE DEGREE

5.3.1. DUAL STUDY PROGRAM - TRAINING-INTEGRATED STUDY OR STUDY-INTEGRATED TRAINING

Prerequisite	University entrance qualification
Duration	3 - 4 years
Costs	different
Qualification	Vocational qualification at NQF4 and Bachelor's degree at NQF6

A new form of combining academic and vocational education is the **integrated dual study program**. This gives the student trainee the opportunity to obtain both a university degree at Bachelor level and an apprenticeship qualification within 3 to 4 years.

The basic idea behind all dual study courses is close cooperation between specialized universities and training companies, which enter into a framework agreement with each other. This ensures that practical training in the company and knowledge transfer at the university are optimally coordinated in terms of content and time.

In the case of **study-integrated training,** a Bachelor's degree course at a university is combined with state-recognized training. This model usually takes 3 to 4 years. You also receive two degrees at the end, a Bachelor's degree at university level and a vocational qualification. The prerequisite here is a university entrance qualification.

During your studies, you work at the training company on a daily or block basis and complete your training. With this so-called partially split model, it is possible that you can finish your training faster than your studies and still have two or three semesters of full-time study after completing your training.

According to Eigenmann (2020), there are still no plans for training-integrated degree courses in Switzerland. Since 2015, however, universities of applied sciences in Switzerland

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have been allowed to offer practice-integrated degree courses on a trial basis as part of measures to combat the shortage of skilled workers. The integration of practical work experience into the degree course is intended to make access from secondary school to universities of applied sciences in technical fields more attractive.

The model of study-integrated training begins with a basic level in which the content of vocational training and studies are interlinked and which should amount to at least 30 ECTS at the university. During vocational training, the normal dual training is completed, whereby care is taken to ensure that the training curriculum is coordinated with the subject-relevant integrated study content in order to avoid repetitions and overlaps.

After one to two years, the basic level can be completed with an intermediate vocational examination.
There are then 3 options:

- Continuation of vocational training
- Continuation of studies up to the Bachelor's degree
- Study-integrated training leading to a double degree

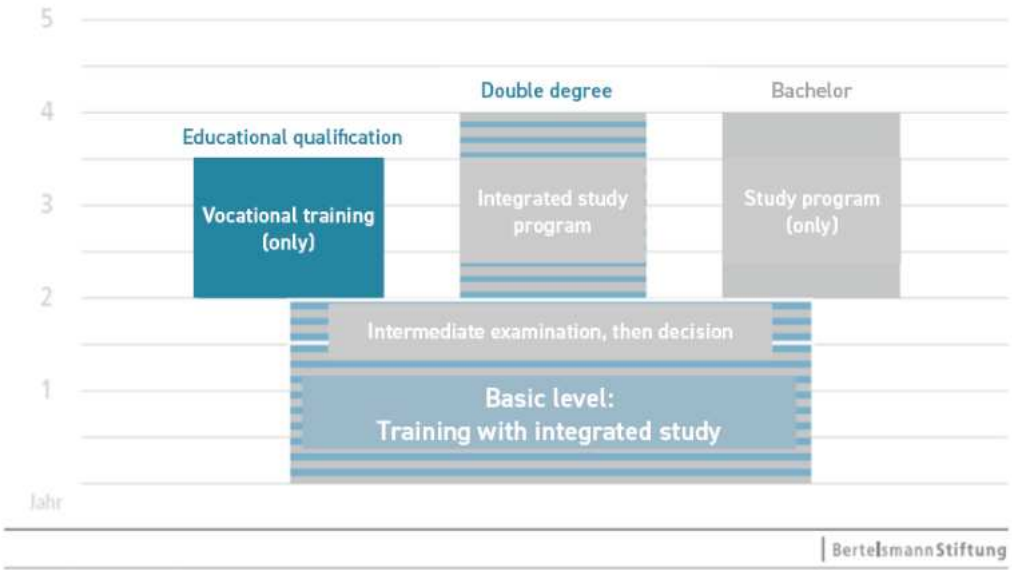

Figure 8: Model of a study-integrated training program (Bertelsmann Foundation, 2016)

Study-integrated training is not intended to replace the dual study program, but to offer an alternative for certain pupils. This means that only pupils who have a higher education entrance qualification can start a dual course of study, while pupils with an intermediate school-leaving certificate should also be addressed in the case of study-integrated training.

This model makes the two otherwise rigidly separated educational paths - apprenticeship and university - more permeable and pupils have the opportunity to try out both without losing time, gain experience in both areas and test their interest and aptitude for both areas. On this basis, they can then make a decision about training and/or studying.

It should be noted that study preparation is mandatory, especially for young people without a university entrance qualification, so that excessive demands can be avoided. Vocational

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and career coaching is also important in order to inform pupils about their career options and to plan concrete steps for implementation.

This coaching and the first study modules can be integrated as an additional qualification and are definitely a gain in competence for the trainee. Even if they do not start a degree course, these can be credited if they take up a degree course at a later date.

It is also important to mention that the study-integrated training is primarily a vocational training relationship and therefore a corresponding employment contract must be concluded.

With this study-integrated training, a form of vocational training enhanced with academic content is being developed. Both vocational and higher education are of equal value and interlinked. The interlinking of the three learning locations (company, vocational school and university) brings advantages for each individual. Vocational schools are upgraded with challenging courses instead of being reduced to qualifications that may be considered less demanding. Companies have the opportunity to attract and retain employees who would otherwise choose a purely academic path and can benefit from the academic approach to current issues and problems.

5.3.1.1. THE HAMBURG UNIVERSITY OF COOPERATIVE EDUCATION (BHH)

Prerequisite	University entrance qualification
Duration	3-4 years
Costs	No tuition fees, neither for students nor for companies, administration fee of 50 euros per semester and contribution to the student council + Students receive a (training) allowance right from the start
Qualification	Vocational qualification at NQF4 and Bachelor's degree at NQF6

One of the best-case examples in Germany for a university that offers study-integrated training is the Hamburg University of Cooperative Education (BHH), which was founded in 2020: https://bhh.hamburg.de/

The training courses offered there are intended to contribute to the equal status of academic and vocational education as well as to represent an interlinked and consistent connection.

The degree courses at BHH combine both the practical skills in the company with the broad knowledge of the entire professional field at the vocational school and the academic skills and scientific methods of the university. The phases at the three learning locations (company, vocational school and university) alternate.

Five different degree programs with vocational training are currently offered:

- Study Business Administration - Industrial Management (B.A.) with training as an industrial clerk
- Study Business Administration - Banking and Finance (B.A.) with training as a bank clerk
- Study Business Administration - Management of Small and Medium-Sized Enterprises (B.A.) with training in a trade or a commercial-technical profession

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- Business Administration - Marketing and Communication Management (B.A.) with training as a marketing communications specialist
- Study computer science (B.Sc.) with training as an IT specialist

The admission requirement is a university entrance qualification (e.g. “Abitur” (High school diploma) or “Fachhochschulreife”). Vocationally qualified students can also gain admission to higher education via an additional entrance examination.

5.3.1.1.1. STUDY BUSINESS ADMINISTRATION - MANAGEMENT OF SMALL AND MEDIUM-SIZED ENTERPRISES (B.A.) WITH TRAINING IN A TRADE OR A COMMERCIAL-TECHNICAL PROFESSION

Prerequisite	University entrance qualification
Duration	4 years
Costs	No tuition fees, neither for students nor for companies, administration fee of 50 euros per semester and contribution to the student council; + Students receive a (training) allowance right from the start
Qualification	Professional qualification at NQF4 and Bachelor's degree at NQF6 (Bachelor's degree (Bachelor of Arts) in Business Administration)

The Business Administration - Management of Small and Medium-Sized Enterprises (B.A.) course with training in a trade or a commercial/technical profession offers a Bachelor's degree (Bachelor of Arts) in Business Administration with a focus on the management of small and medium-sized enterprises (SMEs) in addition to training in a trade or a commercial/technical profession.

During this study-integrated training, the trainee spends blocks of time at the company, the vocational school (dual training) and the BHH as a university. In the first two years, the student is mainly occupied with the dual training at the company and the vocational school and only spends about 5 weeks at the university. In addition, an afternoon seminar at the BHH is planned for about 30 weeks of the year.

The study plan stipulates that the vocational qualification (in a trade or an industrial/technical profession) takes place in the winter semester of the third year of training or study. The young person then works in the company from Monday to Wednesday and at the BHH on Thursday and Friday. The student thus spends the fourth and final year of this dual training in the winter semester both at the company and at BHH, and the summer semester mainly at BHH in order to complete the course with a Bachelor of Arts.

An ingenious combination of practical and theoretical training makes it possible to complete a vocational degree and a Bachelor's degree in four years, taking into account the needs, framework conditions and capacities of a vocational school, a company, a university and the students:

In the first phase of training, the trainee works mainly in the company and at the vocational school. In the second phase, the trained specialist continues to work in the company for the most part. It is only in the final phase that the employed student spends 13 weeks at the university completing their Bachelor's thesis and graduating.

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The company can hire an important specialist early on and use this model to retain employees as trained specialists because they continue their academic training at BHH and not only retain specialist knowledge in the company, but also contribute it as part of their training.

Students have the advantage that they receive remuneration from the outset and can try out under guidance and advice whether a double degree or a degree and vocational qualification is suitable for them or whether a pure vocational training program would suit them better.

There are no tuition fees for students or companies at BHH.

As a prerequisite for a study-integrated degree course at BHH, trainees must agree a training contract with a company for 2.5 years. After completing the (vocational) training after 2.5 years, they switch to an employment contract for the remaining 1.5 years. In addition, there is a study contract that runs for the entire duration of the apprenticeship.

The company and BHH also conclude a cooperation agreement.

5.3.1.1.2. BUSINESS ADMINISTRATION - MARKETING AND COMMUNICATION MANAGEMENT (B.A.) WITH TRAINING AS A MARKETING COMMUNICATIONS SPECIALIST

Prerequisite	University entrance qualification
Duration	4 years
Costs	No tuition fees, neither for students nor for companies, administration fee of 50 euros per semester and contribution to the student council + Students receive a (training) allowance right from the start
Qualification	Professional qualification at NQF4 and Bachelor's degree at NQF6 (Bachelor's degree (Bachelor of Arts) in Business Administration)

The course offers the opportunity to simultaneously obtain a Bachelor of Arts in Business Administration - Marketing and Communication Management and vocational training as a marketing communications specialist.

The training is completed in blocks as dual training in a company, at a vocational school and as a course of study at the BHH. In the first three years of training, 6 weeks per year are spent at the BHH. The trainee spends the rest of the time in a company and at the vocational school. There is also an afternoon seminar.

At the end of the third year, the trainee has the opportunity to complete their training as a marketing communications specialist with a professional qualification. In the fourth year, the phases in the company as a "normal" employee alternate with the phases at the BHH to complete the course.

After four years, a double degree can be achieved without many absences from the company. The company does not lose the trained specialist to a university and can often keep them in

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the company. The student has the opportunity to obtain both a professional qualification and a Bachelor's degree and is therefore highly qualified.

An employment contract must be concluded between the trainee and the company. This must be concluded for the 3 years in which the training is to be completed. In addition, a study contract is concluded for the full 4 years of the study-integrated training. After completion of the (vocational) training, an employment contract is also envisaged for at least the fourth year. A cooperation agreement between the company and the BHH is also required.

5.3.1.2. COOPERATIVE STUDY PROGRAM IN BAVARIA

Prerequisite	University entrance qualification or subject-specific entrance qualification
Duration	4.5 years
Costs	Semester fees and material purchase costs (e.g. at the Munich University of Applied Sciences: 85.00 euros plus another 85.00 euros for the student union)
Qualification	Vocational qualification at NQF4 and Bachelor's degree at NQF6

In Bavaria, the training-integrated degree course is also known as a combined degree course. This allows students to obtain a Bachelor's degree and a vocational qualification at the same time. This form of training lasts a total of 4.5 years (including 27.5 months of practical training and 3 months of Bachelor's thesis), i.e. longer than a standard Bachelor's degree course. Here too, the trainee has the advantage of being able to obtain 2 qualifications at the same time, namely a Bachelor's degree and a professional qualification certified by the Chamber of Commerce.

The prerequisite is a university entrance qualification recognized in Bavaria (e.g. Abitur, entrance qualification for universities of applied sciences, master craftsman's examination or equivalent advanced training examination). For particularly qualified professionals or for professionals who have completed vocational training and have subsequently worked in this profession for at least three years, subject-specific admission is possible.

The Bavarian universities, for example the Munich University of Applied Sciences, work closely with the BMW Group. Practice-integrated dual studies or combined studies over 4.5 years in cooperation with BMW are just some of the options:

- Dual study program in Industrial Engineering Logistics (B. Eng.) with the Apprenticeship as a forwarding and logistics services clerk
- Dual study program in mechanical engineering (B. Eng.) with the apprenticeship as a tool mechanic and the
- Dual study program in business informatics (B. SC.) with the training occupation of warehouse logistics specialist

The dual study program in mechanical engineering (B. Eng.) with the apprenticeship as a tool mechanic is a collaboration between the Munich University of Applied Sciences and the BMW Group plant in Dingolfing. After 4.5 years, you have the opportunity to graduate with both an engineering degree (B.Sc. Engineering) and a vocational qualification as a tool mechanic.

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The trainee spends the first year working in the company and on their vocational training. After that, semesters at the university alternate with practical assignments in the company. In the first semester of the fourth year, a practical semester takes place and in the fifth year, the focus is on the Bachelor's thesis and the completion of the degree.

5.3.1.3. STUDY-INTEGRATED TRAINING NORTH RHINE-WESTPHALIA

Prerequisite	University entrance qualification
Duration	4 years
Costs	Dependent on university, training company participates
Qualification	Vocational qualification at NQF4 and Bachelor's degree at NQF6

Since 2021/22, study-integrated training has also been offered in North Rhine-Westphalia: https://sia-nrw.de/. These study-integrated training courses are now available at a total of nine locations in North Rhine-Westphalia: in Düsseldorf, Jülich, Aachen, Essen, Frechen, Cologne, Krefeld, Mönchengladbach and Remscheid.

This means that the opportunity to acquire a vocational qualification and a degree in parallel is also offered in North Rhine-Westphalia, where what is learned in the company, at vocational school and at university is linked and achievements are mutually recognized. It is only during the training, after around 12 to 18 months, that the trainees decide on the basis of their previous experience whether they want to aim for a double degree or just complete one of the two courses. The learning content is interlinked in such a way that the time required is based on a regular 40-hour week.

The admission requirement is an entrance qualification for universities of applied sciences or a general higher education entrance qualification. In addition, a contract for study-integrated training with a company in a participating profession is required. This is initially only possible at selected locations.

The study-integrated training courses on offer are very diverse and linked to the respective locations. In Jülich/Aachen, for example, there is an offer for training as an industrial mechanic or precision mechanic, where it is possible to complete a degree in mechanical engineering at the same time.

The prerequisites are a university entrance qualification and the conclusion of a training contract as an industrial mechanic or precision mechanic with a training company participating in the SiA concept.

The study-integrated training starts in parallel at all three participating locations: FH Aachen at Campus Jülich, Berufskolleg Jülich and the individual training company, and combines the training occupations of industrial mechanic or precision mechanic with the mechanical engineering course. The times and content of the three learning locations are coordinated.

Trainees can obtain two qualifications in one course: Firstly, the IHK qualification as an industrial mechanic or the HWK qualification as a precision mechanic and then a Bachelor's degree in mechanical engineering.

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The examinations are the responsibility of FH Aachen, although preparation for them also takes place in parallel at vocational school. Apprentices have the opportunity to obtain both qualifications within four years. They can first get to know the course and then decide after 12 - 18 months whether they want to continue their studies alongside their training.

This study-integrated training also has great advantages for companies because, among other things, it enables the recruitment of young people who are motivated to learn and perform well and can bind them to the company thanks to long-term and attractive prospects. In addition, companies gain trainees who are also proficient in scientific methods and can apply them in the company.

5.3.1.4. FH KÄRNTEN: STUDY "SYSTEMS ENGINEERING - DOUBLE DEGREE, PROCESS ENGINEERING AND ELECTRICAL ENGINEERING: SYSTEM AND OPERATING TECHNOLOGY

Prerequisite	University entrance qualification
Duration	3 years
Costs	€ 363.36 per semester plus ÖH fee
Qualification	Vocational qualification at NQF4 level (process engineering and electrical engineering: system and operating technology) and Bachelor's degree at NQF6 level (Bachelor of Science in Engineering)

Dual studies with a double degree are also possible in Austria, for example at the Carinthia University of Applied Sciences: https://www.fh-kaernten.at/studium/engineering-it-berufsfreundlich/bachelor/systems-engineering

Since the winter semester 2020/21, it has been possible to complete a double apprenticeship for the job profile "Process Engineering and Electrical Engineering: System and Industrial Engineering", which has been shortened to 3 years, in addition to the Bachelor's degree in Systems Engineering.

This offer is a collaboration between Infineon Technologies Austria AG, Flex, RHI Magnesita, the Villach vocational school, the GPS apprenticeship workshop and the Carinthia University of Applied Sciences to enable apprentices and students to combine apprenticeship and studies. This dual training program is aimed specifically at high school and college graduates who want to complete an apprenticeship after graduating from high school and are interested in in-depth on-the-job training.

This training is divided each week between dual vocational training and studies at the Carinthia University of Applied Sciences: Apprentices spend four days working at the company and two days attending vocational school or studying at the Carinthia University of Applied Sciences.

In order to participate in this program, the apprentice must first apply to a company that offers the apprenticeship "Process Engineering and Electrical Engineering: Systems and Industrial Engineering". After successfully applying for the apprenticeship, it is possible to

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submit an application to the Carinthia University of Applied Sciences for the part-time Bachelor's degree program in Systems Engineering.

5.3.1.5. COOPERATION FH CAMPUS WIEN - SIEMENS

Prerequisite	University entrance qualification
Duration	3 years
Costs	Free of charge and monthly training allowance from € 1750 on a part-time basis
Qualification	Vocational qualification at NQF4 and Bachelor's degree at NQF6

Since the 2021/22 academic year, there have been two new training-integrated degree programs at the University of Applied Sciences Campus Wien for the first time: https://www.fh-campuswien.ac.at/departments/technik/lehre-und-studium-kombiniert-mechatroniker-und-computer-science.html

These combine a bachelor's degree with skilled worker training, which is completed directly at Siemens. These two new training courses are primarily aimed at high school graduates who already have a university entrance qualification.

The bachelor's degree in "High Tech Manufacturing" is combined with the intensive skilled worker training in "Electrical, System and Industrial Engineering" at Siemens Mobility Austria. The "Mechatronics Technician for Automation Technology" apprenticeship at Siemens AG Austria is combined with the "Computer Science and Digital Communications" Bachelor's degree program at FH Campus Wien in order to offer a second degree-integrated apprenticeship.

Students have the opportunity to deepen their knowledge in real projects and gain valuable experience and expertise in professional training that they would not be able to gain in a pure course of study.

The integrated Computer Science and Digital Communications course lasts a total of six semesters and starts in parallel with the apprenticeship training (38.5 hours) at Siemens AG Austria in part-time form. The Bachelor's examination for the Bachelor of Science degree takes place after three years at the earliest.

5.3.1.6. COOPERATION BETWEEN FH ST. PÖLTEN AND SIEMENS: SMART ENGINEERING DEGREE PROGRAM - TRAINING AS AN ELECTRICAL ENGINEER

Prerequisite	University entrance qualification
Duration	3 years
Costs	€ 363.36 plus ÖH contribution
Qualification	Vocational qualification at NQF4 level (electrical engineer) and Bachelor's degree at NQF6 level (Bachelor of Science in Engineering)

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3LoE
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Siemens also cooperates with the St. Pölten University of Applied Sciences for the bachelor's degree course in Smart Engineering and offered the first training-integrated degree course in Austria: https://www.fhstp.ac.at/de/studium/medien-digitale-technologien/smart-engineering

Since September 2019, graduates have been able to obtain a Bachelor of Science in Engineering after 7 semesters in addition to an apprenticeship as an electrical engineer. The practical training takes place directly at Siemens in the company. The program is primarily aimed at AHS graduates. The prerequisite for this training-integrated course is a university entrance qualification.

By involving students in the company at an early stage, the company benefits from hiring employees from the outset who have received the latest scientific findings and can apply them directly in the company.

Students are offered a training program that is compatible with working in a company and also enables them to complete a double degree.

The content of both training courses is interlinked in such a way that the time required is significantly shorter than if both courses were completed in succession. At the same time, duplication of learning is avoided because the content is coordinated.

5.3.2. THREE DEGREES = TRIAL STUDY PROGRAM

Prerequisite	University entrance qualification
Duration	5 years
Costs	The tuition fees depend on the respective training occupation and the study location
Qualification	Vocational qualification at NQF4, master craftsman's certificate at NQF6 and Bachelor's degree at NQF6

The trial study program, which is currently only offered in Germany, is still a relatively new model and is based in the skilled trades sector. The aim is to encourage high school graduates who are more interested in studying to become interested in professions and career paths in the skilled trades. It is possible to complete 3 degrees in the "Crafts Management" trial course: In addition to an apprenticeship in a skilled trades company, you obtain a master craftsman's certificate and complete a bachelor's degree in business administration.

After 2.5 years of training, the apprentice takes the journeyman's examination. He/she then devotes even more time to studying and attending master school. After the master craftsman's examination, he/she then writes the bachelor's thesis and receives the Bachelor of Arts in Craft Management. While it would take 8 to 9 years to complete these 3 qualifications one after the other, this model takes around 4.5 to 5 years.

The "Crafts Management" trial course is still relatively new and has so far only been offered by the Fachhochschule des Mittelstands (FHM) in cooperation with the Chambers of Crafts in Cologne, Hanover and Schwerin and by the Niederrhein University of Applied Sciences in cooperation with various regional partners.

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The trial course is currently offered in 19 skilled trades:

1) Optician
2) Baker
3) Roofer
4) Electrical engineer
5) Precision mechanic
6) Tile, slab and mosaic layer
7) Hairdresser
8) Information electronics technician
9) Bodywork and vehicle construction mechanic
10) Automotive mechatronics technician
11) Confectioner
12) Painter and varnisher
13) Bricklayer
14) Metal worker
15) Stove and air heating fitter
16) Road builder
17) Carpenter
18) Dental technician
19) Two-wheel mechatronics technician

The trial study program at the Fachhochschule des Mittelstands (FHM), at the 5 locations Bielefeld, Cologne, Hanover, Bamberg and Münster, is somewhat different. The models differ depending on the location.

At Niederrhein University of Applied Sciences, students start their studies and vocational training in one of the 19 skilled trades at the same time. The (vocational) training takes place in a company and is completed after 2.5 years with an examination at the Chamber of Crafts. During the week, students spend most of their time at the training company. They also attend the vocational college (vocational school). The course is taught in small learning groups using attendance phases, e-learning and study letters. However, students must complete a large part of their studies in self-study phases. A high level of self-motivation is required!

At least 22 credit points must be collected in the first two semesters in order to register for examinations in semesters 3 to 10. This interlocking is intended to help ensure that the course is not neglected and that the student can complete all 3 degrees in 10 semesters.

After successfully completing the vocational training, the third part of the Trial Study Program takes place: further training to become a master craftsman in the chosen profession. After passing the master craftsman's examination, the final study phase begins. A Bachelor's thesis must be written here. At the end of all examinations, the student is awarded the Bachelor of Arts (B.A.) Crafts Management degree in addition to their vocational qualification and the master craftsman's certificate.

At the Fachhochschule des Mittelstands (FHM), the Bachelor of Arts (B.A.) in Crafts Management was developed in close cooperation with the skilled crafts sector and its organizers. In particular, the need for a qualification that is both technically sound and application-oriented was met.

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The apprenticeship and the craft management course start at the same time. As part of the apprenticeship, the trainee spends the majority of the working week at the training company. There are also days at the vocational college and in inter-company training. This phase ends with the successful completion of the journeyman's examination. As a journeyman, a period of time follows in which you can concentrate exclusively on your studies and master craftsman qualification.

The parallel Bachelor's degree course is divided into part-time and full-time phases and takes place in small learning groups. The study units in the attendance phase (Friday and Saturday) are supplemented by e-learning units and study letters from experienced lecturers at the Fachhochschule des Mittelstands (FHM). There is also a lock-in period after the first two semesters, whereby you can only register for examinations in the 3rd to 10th semesters if you have collected 22 credit points in the first two semesters.

Preparation for the master craftsman examination takes place in master craftsman courses at the Cologne Chamber of Crafts. After successfully passing the examination to become a master craftsman, the final stage of the course involves writing a practice-oriented Bachelor's thesis. Successful completion of the course leads to a Bachelor of Arts (B.A.) in Crafts Management.

In North Rhine-Westphalia, the trial course begins each year in the winter semester and lasts five years (10 semesters). The "Crafts Management - Business Administration B.A." course can be combined with any skilled trade apprenticeship. During the week, students complete their practical training in the company and attend the vocational college. The lectures at the Niederrhein University of Applied Sciences in Mönchengladbach take place at the weekend. In the first two semesters, students spend two half days at the university. From the third semester onwards, study time is extended to Friday evenings and all day Saturday. The master school is ideally attended full-time in the 8th and 9th semester at the Düsseldorf Chamber of Crafts.

In North Rhine-Westphalia, it is also possible to apply for a study place if you have completed training in a skilled trade and have a valid employment contract. In this case, the training is taken into account and the participants only complete the master craftsman and bachelor's degree.

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6. SUMMARY AND DISCUSSION

Enabling lifelong learning as an aspirational goal for everyone also means responding to the dynamic changes in the economy, society and the environment (digitalization, use of AI, energy transition, climate crisis, ageing society) by improving qualification opportunities. For this reason, the Austrian strategy for lifelong learning "LLL:2020" was adopted by the federal government in July 2011 (erwachsenenbildung.at, 2023). Available at: https://www.qualifikationsregister.at/wp-content/uploads/2018/11/Strategie1.pdf

The traditional separation between dual apprenticeship training and school-based training in Austria has led to two different ministries being responsible for the Austrian education system. For

- The Federal Ministry of Education, Science and Research (BMBWF) is responsible for school and academic education,
- for apprenticeship training - dual vocational training, the Federal Ministry of Labour and Economy (BMAW).

In order to improve the permeability and interlinking of vocational and academic education and training, the different responsibilities of ministries and authorities as well as the legal basis must be taken into account.

In Austria, the education system has become more closely interlinked, primarily through the implementation of the Bologna Process (the EU-wide higher education reform) in 2010. A further improvement in the interlinking and permeability of vocational education and training in Austria was achieved on December 14, 2023 through the unanimous decision of the National Council regarding the law for higher vocational education and training (Tyrolean Chamber of Commerce, 2023). The possibility of obtaining two or even three qualifications at the same time is also a clear sign of the ever-increasing integration and permeability of vocational and academic education.

The Hamburg University of Cooperative Education (BHH) in particular is setting a good example. According to Uwe Schaumann and Joachim Kiedrowski, **successful collaborations** are the secret recipe for the successful implementation of the BHH (Kiedrowski & Schaumann, 2023). The following steps were important for the implementation - and are still important for the continuation of the BHH:

1. **Clear political commitment**
   From the very beginning, the City of Hamburg made a clear political commitment to improving the integration and permeability of vocational training and higher education and to offering a dual study program.

2. **Cooperation on an equal footing**
   As early as the development phase, all parties involved were brought together to jointly develop the implementation of a dual study program. For example, in addition to the directors of vocational schools and universities, the respective teaching staff, who then actually have to implement the lessons, as well as entrepreneurs, who are to employ students and integrate them into their day-to-day work. In addition, the development process was accompanied by a neutral, qualified team of moderators.

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3. **Financing of all phases**
   It is important to ensure financing for all project steps (including before and after):
   a. (Process) development (before)
   b. Implementation
   c. Continuation (thereafter)

4. **Work in progress**
   Remaining open to change and constantly pushing ahead with the continuation of the business, for example implementing crediting options for interested parties with different educational backgrounds.

5. **Communication**
   Continuous, regular communication with selected contact persons from the various stakeholders. Adaptation of new communication formats, e.g. a shorter quarterly online exchange is better than ***a*** long annual meeting.

In short, the be-all and end-all for improving the permeability and interlinking of vocational and academic education begins with a clear political commitment that creates the framework conditions: both financially and organizationally as well as legally.

Funding, exchange and cooperation opportunities can be realized primarily through long-term projects funded by the EU, which ideally also involve collaboration and cooperation, such as the two Erasmus+ projects 3LoE and SmartVET-HighED.

In addition to extensive online research, the exchange with 3LoE project partners and the 3LoE project management has also shown that the creation of new permeable and interlinked training programs is only possible with great commitment from those involved and years of development and pioneering work. This pioneering work can be particularly successful if independent funding is guaranteed from the outset, as is made possible by EU projects that promote interdisciplinary cooperation at various levels.

The team at Hamburg University of Cooperative Education, for example, brings 20 years of experience and expertise to the table. The Free Hanseatic City of Hamburg has been carrying out concrete preparatory work for the implementation of a dual study program since 2018 by developing a concept and searching for cooperation partners. A key step was the enactment of a new law that made it possible to establish the BHH in the first place. After numerous development steps and coordination processes, the first cohorts were admitted to the BHH in 2021.

In the field of trial studies, the 3LoE project manager, the Hanseatic Parliament, has been implementing trial technical courses of study (e.g. construction engineer or electrical engineer) with a duration of four years and three recognized qualifications with the University of Applied Sciences 21 in Buxtehude and with universities in Gdansk and Vilnius for six years:
- apprenticeship certificate
- Master craftsman
- Bachelor's degree

In Austria, the Hanseatic Parliament has also been working with another 3LoE project partner, WIFI Styria, and the University of Graz for three years to develop a four-year trial

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3LoE
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degree program in "Building Technology and Renewable Energies" with bachelor's, master's and apprenticeship degrees. Trials are currently underway and will be completed by the end of February 2025. After that, WIFI intends to run this and other trial degree programs on an ongoing basis.

Above all, change can succeed if it is supported by all those involved and there is an opportunity for all those involved to meet on an equal footing. This means that everyone involved must have a say in order to be able to contribute themselves and their perspective. A working atmosphere of mutual appreciation and recognition must be created - both on the part of those involved in vocational and academic education.

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7. LIST OF ILLUSTRATIONS

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"Pilot Project – Dual Study Program – Mechatronics Engineer"

IAGF - Institute for Applied Research of Skilled Crafts and Trades

Aimie Jung, BSc & DI Heidrun Bichler-Ripfel, IAGF

INTRODUCTION

The EU co-financed Erasmus+ project "3 LoE - Three-level Centers of Professional Excellence" aims to improve the permeability between vocational and academic education. This is achieved through the introduction of new educational models such as dual study programs.

When developing the work packages (WP) for the EU 3LoE project, the IAGF proposed for WP 5 to improve the permeability of dual vocational training between the NQF 4 and NQF 6 levels and to develop a "dual study program" pilot for occupational groups from skilled crafts and trade. In particular, high school graduates or university dropouts should be given the opportunity to obtain two qualifications as part of a dual study program with a single training course: an apprenticeship qualification and a Bachelor's degree.

The study-integrated training offered by the 3LoE project partner "Berufliche Hochschule Hamburg" (“Hamburg Vocational University” - PP24) serves as best practice, specifically: the degree program "Business Administration - Management of Small and Medium-Sized Enterprises (Bachelor of Arts)".

The occupational group selected was mechatronics engineers in Austria. This group proved to be particularly suitable for this pilot project for several reasons:
As an innovation-driven industry, this group is used to having to be constantly up to date - lifelong learning is part of every day’s practice. Furthermore, mechatronics companies are facing new challenges, particularly concerning the "green economy" and must train enough qualified specialists so that the goals of the energy transition can be realized. Finding and retaining sufficient skilled technicians is a challenge for Austrian mechatronics engineers, as is making dual training more attractive to younger generations. In short, the “Pilot Project – Dual Study Program – Mechatronics Engineer” is an innovative option in the education sector that can provide additional relief.

Index

1. DUAL STUDY PROGRAM - CONCEPT

1.1. STATUS QUO

Based on the study-integrated training offered by BHH, the Hamburg Vocational College, there are currently no comparable dual study models in Austria that combine both an academic and a vocational qualification in one training program and stringently and efficiently combine both practical and theoretical content at three training locations - (training) company, vocational school and university of applied sciences. This was also shown by the results of the IAGF survey, which were included in the report "Dual study programs - interlocking and permeability of vocational and academic education" (enclosed as an external supplement).

Dual vocational training in Austria mainly begins at the age of 16, in Germany also at the age of 18. It has been shown that an 18-year-old - after successfully completing puberty - shows more maturity for vocational training, seems to know better what he/she wants to do professionally and therefore can be better deployed by entrepreneurs.
High school graduates or university dropouts, on the other hand, have the opportunity to obtain two qualifications in a single training program as part of a dual study program: a vocational qualification and an academic qualification, for example the final apprenticeship qualification for mechatronics engineers and a Bachelor of Arts degree in business management for small and medium-sized enterprises.

A dual study program could therefore be an attractive solution for entrepreneurs as well as for young high school graduates or university dropouts and provide the necessary skilled workers, especially for the green economy sector.

For the "Dual Study Program" pilot project, the "Business Administration - Management of Small and Medium-Sized Enterprises (Bachelor of Arts)" course at Hamburg Vocational College was to be used and Austrian mechatronics engineers were selected as a suitable occupational group (see introduction).

1.2. THE CHALLENGE

One of the biggest challenges is to make the dual system attractive for both companies and students. This requires close cooperation between educational institutions and companies in order to develop practical and future-orientated training content. Above all, sophisticated scheduling is essential so that companies can utilize dual students in their day-to-day work. A prerequisite for this is the interlocking of theory and practice in the respective training locations, companies, vocational schools and universities of applied sciences/universities, so that duplication can be avoided and synergies utilized.

In Austria, there is currently no comparable training program to that offered by the Hamburg Vocational College (BHH). As the traditions of vocational training in Germany are comparable to Austria in the main features, the dual study program at Hamburg University of Cooperative Education could be a best-case example for Austria with realistic chances of implementation.
The two invited speakers, Prof. Dr Joachim von Kiedrowski, Vice President for Studies and Teaching at the BHH, and Prof. Dr Uwe Schaumann, bring with them a wealth of expertise and 20 years of experience in the development and implementation of dual studies in the

field of "Improving the permeability and interlinking of vocational and academic training", as well as in finding suitable networks, financing and organizational measures and legal requirements, both in the conception and planning as well as in the implementation and ongoing university and training process.

1.3. OBJECTIVE

New initiatives and opportunities for young people in training are needed to make training pathways for professions in skilled crafts and trade more attractive. The aim is to make vocational and academic educational pathways more permeable and interlink them so that they become more attractive. For this reason, new "hybrid training programs" are to be developed, similar to a "dual study program", in which academic and vocational training can be combined in one training program. The aim is to enable both a vocational qualification in the trades and crafts and an academic Bachelor's degree in one training program.

Another aim is to start a discussion process in all professional groups in the skilled crafts and trades in order to promote innovative ideas and sufficiently attractive training opportunities for young people.

In addition, the aim is to develop a pilot program for at least one occupational group from the trades and crafts sector or to create the conditions for this pilot to be carried out in Austria. Successful "dual study program" concepts from Germany are to be used as a model.

1.4. PLANNED MEASURES TO ACHIEVE THE TARGET

According to the 3LoE activity plan, the IAGF completed the following work packages as project partner PP13 as part of work package WP5 A2.3:

	Work Packages
1	Survey in German-speaking countries (Austria, Switzerland, Germany) - best case examples, scientific literature and symposia/specialist conferences on the topic of "Interlocking and permeability of vocational and academic education"
2	Survey of interest among the professional groups - information from the Federal Guild Master or representative of the further training committee; professional group conference etc.
3	Survey of potential partners in Austria - information 9 WIFIs, various universities of applied sciences, universities; establishment of cooperation with interested WIFIs, universities of applied sciences, etc.
4	Planning and realization of information trip for best case examples with BIMs, LIMs, experts from training committees, etc.
5	Planning symposium on the topic in spring/summer 2023
6	Development and implementation of a pilot in Austria
7	Reporting on the results of the work packages

Figure 1: Overview of the individual 3LoE work packages of WP5 A2.3

2. PLANNING PHASE

The starting point for the implementation of the "Dual Study Program" pilot project was a survey of best-case examples in German-speaking countries (Austria, Switzerland, Germany), academic literature and symposia and conferences on the topic of "Interlocking and permeability of vocational and academic education". This survey was incorporated into

the report entitled "Dual Studies - Interlocking and Permeability of Vocational and Academic Education, IAGF" as part of work package WP5 A2.3, 1.

Originally, an informational trip with interested professional groups to the respective best cases was planned. Due to the time constraints of the interested professional group of mechatronics engineers, representatives of the best-case example "dual study program" in Hamburg were brought to Austria and held in the form of an impulse workshop. This was preceded by numerous planning measures; the most important steps are listed here in chronological order.

In principle, there was close, constructive coordination between the management of the Federal Guild, the assistance of the Federal Guild, the two planned external speakers from the Hamburg University of Applied Sciences, as well as the event managers of the two hotels in Salzburg and the IAGF, in order to ensure all the necessary steps for a successful implementation of the workshop in advance, both in terms of content and organization (such as clarification of the wishes and expectations as well as the level of knowledge of the target group on the topic, the course of the workshop, content preparation, content coordination and allocation to speakers, content involvement of the management and participants; Organizational matters such as 3LoE travel expenses, travel, accommodation, catering, size and equipment of the seminar room, networking opportunities, ...).

The starting point for the new orientation and planning of an impulse workshop was an internal ZOOM meeting with the following details:

- **Date: Thu, 11.01.2024**
  - **Participants:**
    - MMSt. DI Andreas Gruber, Consultant, BI of Mechatronics Engineers
    - DI Heidrun Bichler-Ripfel, IAGF, Institute Director
    - Aimie Jung, BSc, IAGF, Project Manager

  - **Target:**
    - Scheduling & coordination of the content of a workshop for mechatronics engineers
    - Selection of participants
    - Selection of the workshop leader
    - Coordination of implementation, both in terms of content and organisation

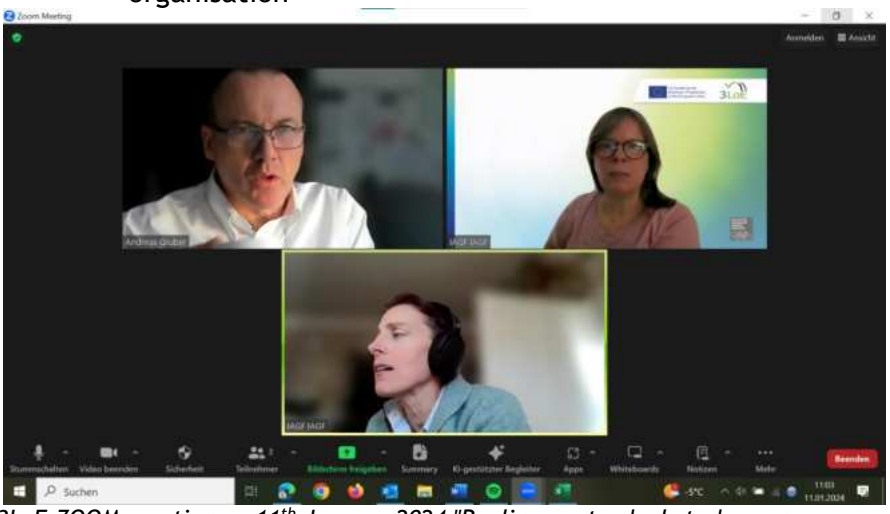


Figure 2: 3LoE-ZOOM meeting on 11th January 2024 "Realignment - dual study program - mechatronics engineer"

An important milestone in the planning phase was the coordination of content with the management of the Federal Trade and Crafts Division at a personal meeting on the premises of the Vienna Economic Chamber:

- **Thu, 25th January 2024: "Personal meeting - BSGH/IAGF - Dual studies in Austria"**
  - **Participants:**
    - Prof Dr Reinhard Kainz, Managing Director of the Federal Trade and Crafts Division, WKO
    - Alexander Rauner, consultant for the Federal Trade and Crafts Division, expert for dual vocational training
    - DI Heidrun Bichler-Ripfel, IAGF, Institute Director
    - Aimie Jung, BSc, IAGF, Project Manager
  - **Target:**
    - Coordinating & Defining
      - Current status of Austrian forms of training
      - Improving dual vocational training and making it more attractive

At this meeting, it was noted that great importance is attached to the implementation of the Dual Academy in Upper Austria. The interest in a dual study program is still to be examined.

Figure 3: Excerpt from the PowerPoint presentation on 25 January 2024 "3LoE meeting BSGH - IAGF/Dual Studies in Austria"

Further ZOOM meetings and telephone meetings followed for planning as well as organizational and content coordination. Here are the most important details of the final main meeting via ZOOM:

- **Tuesday, 7 May 2024,** ZOOM meeting
  - Participants:
    - Prof Dr Uwe Schaumann, BHH
    - DI Heidrun Bichler-Ripfel, IAGF
    - Aimie Jung, BSc, IAGF
  - Objective: Final content planning of the workshop and allocation of the content to 3 speakers

In the course of the final content planning, it was also decided to email 3 questions to the participants in advance (one open question, 2 with possible answers) in order to capture an initial picture of the mood and to be able to offer a customized workshop:

1. **Which qualification pathway can I offer a young person (15 – 18-year-old) in my company so that I am attractive to him/her?** (Please tick or mark as appropriate or delete as appropriate).
    - HTL
    - Dual Vocational Training
    - Study
    - Other:

2. **Can we make progress with the traditional qualification program in order to be sufficiently attractive for young people (15 - 18-year-olds) and at the same time retain enough skilled staff**?
    - Open answer:

3. **Are you familiar with the dual study program at a university/college? (**Please tick or mark as appropriate or delete as appropriate.)
    - YES
    - NO
    - I don't know.

2.1. PLANNED WORKSHOP

A workshop was organized for all Austrian mechatronics experts as a prelude and introduction to the topic of "Dual studies in Austria", with the option of holding further workshops if there is interest and demand.

The aim of this workshop was to:

- to capture an initial mood and
- to clarify whether and to what extent the experts are interested in a dual study program for mechatronics engineers in Austria,
- what options are available for implementation,
- which requirements (legal, organizational, content-related ...) need to be met for this -
- and whether cooperation with the Hamburg Vocational is sensible and feasible.

2.1.1. PLANNED WORKSHOP PROCEDURE

In coordination with the Austrian Federal Guild of Mechatronics Engineers and the Hamburg Vocational College, the following key points (procedure and content) were planned:

Title: **"Best Practice for Dual Training of the Future -**
Two degrees in one with the "dual study program"

Date: **6 June 2024; 09:00 - 13:00**
(as part of the BIAS for mechatronics engineers in Salzburg from 5 - 7 June 2024))

Lecturers: **Hamburg University of Cooperative Education (BHH)**
Prof Dr Joachim von Kiedrowski, General Business Administration
Prof Dr Uwe Schaumann, General Business Administration

Moderation: **Institute for Applied Industrial Research (IAGF)**
DI Heidrun Bichler-Ripfel (IAGF)
Aimie Jung, BSc (IAGF)

Location: **"Zentrum für Visionen"**
Exact location/room to be announced
Urstein Nord 30, 5412 Puch near Hallein

Organisation/ spatially: Maria Milisits, assistant to the Federal Guild of Mechatronics Engineers, organized the participants' accommodation, the seminar room and the supporting program.

Organisation/ Content: Workshop, cooperation between the management of the BI, the BHH and the IAGF took place via Aimie Jung, BSc, IAGF.

2.1.2. PLANNED WORKSHOP SCHEDULE

09:00 am: Welcome by the Federal Guild of Mechatronics Engineers

09:30 am: Introduction - 3 LoE Project (IAGF)
"3LoE creates new education and training for green jobs"
Link:3LoE - Three-level centres of professional excellence - Qualification, entrepreneurship and innovation in the Green Economy (3-loe.eu); 20240315

09:45 am: Overview - Dual study program - added value & opportunities (IAGF)
"A brief overview" + introduction of the lecturers at Hamburg University of Cooperative Education (BHH)

09:45- 10:30 a.m.: Presentation - Best practice "Dual study programme at BHH" with focus on the study programme "Business Administration - Management of small and medium-sized enterprises" by
Prof Dr Joachim von Kiedrowski & Prof Dr Uwe Schaumann

10:30 - 11:00 a.m.: Break

11:00 - 12:30 World Café with five tables on 5 topics (details, see 2.1.1)

12:30 - 13:00 Press conference & photo session

13:00 hrs Lunch together

If required: Discussion, question and answer session on Friday mornings

2.1.3. PLANNED WORKSHOP CONTENT

- **Greeting**
  - Welcome:
    Goal: get to know the dual study program; create good framework conditions: Timing, premises, standardized form of address (first name)
- **Presentation: EU project "3LoE"**
  - Link to 3LoE website
    Objective: To familiarize yourself with the EU 3LoE project and the collaborations
- **Transition & Introduction**
  - For details, please see chapter 3.
- **Best practice - Hamburg University of Cooperative Education**
  - For details, please see “presentation – Uwe Schaumann” (ext. attachment).
- **World Café - 5 tables (groups) - 5 topics!**
  - **World Café - Table 1 - Recruiting - Establishing contacts**
    - Which young people do I want to have in my company? What qualifications should they have (e. g. educational, personal, social, etc.)?
    - How and where can I find a young person? (e. g. by approaching them directly in schools, at apprenticeship fairs, at career orientation events, etc. and/or by using social networks, own homepage, etc. and/or by means of traditional job adverts, which may also be read by (grand)parents, etc.).
    - What interesting information can I use to "advertise" my company to potential applicants? What could interest a young person in the training occupation, in the company?
    - ...

  - **World Café - Table 2 - Internship phase**
    - Labor law: Free internship (similar to the school phase)
      Duration: approx. 2 weeks
    - As a company, how do I organize the initial contact in the company?
    - What insights should a young person gain in my company?
    - Which employees do I involve?
    - What specific goals am I pursuing with the internship?
    - What requirements do I place on interns (e.g. in terms of punctuality, interest/motivation, practical skills, etc.)?
    - ...

  - **World Café - Table 3 - Company regulations - Contractual conditions**
    - What company and contractual regulations should I draw up for an apprenticeship?
    - Are the statutory minimum requirements sufficient or can I also increase the attractiveness of a training position by adding other elements, e.g. by organizing (flexible) working hours, holidays, paid overtime, trainee ticket for public transport, bonuses or premiums for special achievements, target agreements, participation in "career/performance competitions", highlighting development opportunities, etc.)?
    - ...

- **World Café - Table 4 - Pre-boarding and on-boarding**
  - How do I organize the pre-training phase to prevent ghosting, for example?
  - Who maintains contact with the trainee in what form in the weeks/months after signing the contract and before the training program (pre-boarding)?
  - Who organizes the on-boarding process on the first day, in the first week and until the end of the probationary period?
  - Is there a direct contact person for the trainee (e.g. with a so-called buddies program (buddies are often older trainees who accompany the newcomers), alternatively also: sponsors, mentors etc.)?
  - ...

- **World Café - Table 5 - Co-operation partners**
  - Which co-operation partners do I need for the acquisition and support of trainees? (e.g. general education schools, vocational schools, universities (university dropouts)
  - Which players in vocational training are of particular interest to me? (e.g. social and/or state organisations for vocational orientation, career selection, training support...)
  - In which networks can I find such players?
  - ...

2.1.4. INVITED EXPERT GROUP

In consultation with the head of the Federal Guild of Mechatronics Engineers, with Federal Guild Master (BIM) Andreas Kandioler and the Federal Guild Managing Director (BI-GF) of Metal Technicians, Christian Atzmüller, the IAGF has put together a group of experts consisting of members of the Federal Guild Committee (BIAS).

The basis for the participants was the official list of participants for the BIAS.
This group of experts consists of company representatives from all over Austria as well as entrepreneurs who are active in vocational education and training. The secretariat of the Federal Guild of Mechatronics Engineers sent out invitations to the workshop to the following participants:

The invited group of experts was based on the official list of participants of the Federal Committee Meeting of Mechatronics Engineers:

BL	Funktion	Titel	Vorname	Zuname	Straße	PLZ	Ort	Telefon	Email
NÖ	BIM LIM KommR	Ing.	Andreas	Kandioler	Traisenauerstraße 22	3150	Wilhelmsburg	02746/2402	andreas@kandioler.net
ST	BIM-Stv. LIM KommR		Herbert	Brunner	Gabelhoferstraße 5	8753	Fohnsdorf	03579/82105	h.brunner@antemo.com
B	BIM-Stv. LIM KommR Mst.		Herbert	Ohr	Stoob-Süd 36	7350	Oberpullendorf	02612/431 92-0	herbert.ohr@gmx.at
ST	LIM-Stv.		Johannes	Bindar	Tolapark 1	8572	Bärnbach	03142/28730	j.bindar@energie-contor.at
S	LIM-Stv.	Ing.	Michael	Brockner	Gewerbestraße 5	5301	Eugendorf	0662/827866	mb@bhs.co.at
V	LIM		Walter	Bösch	Maria-Theresien-Str. 59	6890	Lustenau	05577/82422	walter.boesch@wboesch.at
K	LIM	Ing.	Harald	Dullnig	Franz Dullnig Gasse 2	9020	Klagenfurt	0463/339088	harald.dullnig@dullnig.at
S	LIM		Martin	Fagerer	Vordorfager 12 a	5061	Elsbethen	0662/620509	office@mechatronik-fagerer.at
OÖ		DI	Wolfgang	Gaßner	Steinleiten 39	4890	Frankenmarkt	07684/85010	office@gassner.co.at
W		Mag.	Thomas	Gerhardt	Rosedaweg 65	1220	Wien	01/282 51 44	office@webtom.at
NÖ	LIM-Stv. KommR	Dipl.-HTL-Ing.	Harald	Graf	Dir. Franz Danzingerstraße 23	2523	Tattendorf	02253/81886	technofit@graf-on.net
NÖ	LIM-Stv. MMSt.		Heinz	Höfler	Am Rosenbüchl 6	3130	Herzogenburg	0664/3357667	h.hoefler@kt-h.at
T	LIM		Werner	Klinglar	Dorfstraße 33	6176	Völs	0512/303523	werner.klinglar@aon.at
B		Ing.	Robert	Liszt	Nussgrabengasse 72	7471	Rechnitz	03363/77233	r.liszt@liszt-mft.at
W	LIM	Ing.	Peter	Merten	Puchgasse 9	1220	Wien	01/2594646	mej@merten.at
OÖ	LIM-Stv.		Klemens	Mittermayr	Arnreit 51	4122	Arnreit	07282/7009-0	k.mittermayr@m-toc.at
OÖ	LIM-Stv.		Peter	Reiter	Sportstraße 7	4142	Hofkirchen	0720/898000	p.reiter@saamtoc.at
W	Meisterin	Ing.	Sonja	Raumüller	Johann-Josef-Krätzer-Gasse 6	1230	Wien	01/8659260-15	rauli2@raumueller-tewa.at
T	LIM-Stv.	Ing.	Albert	Siebenförcher	Valiergasse 38	6020	Innsbruck	0512/546655	albert.siebenfoercher@kaltoplan.at
OÖ	LIM		August	Stockinger	Gärtnerstraße 10	4502	Sankt Marien	0660/4165864	august.stockinger@drei.at
B	LIM-Stv.	Ing.	Ingmar	Ulreich	Industriestraße 26a	7400	Oberwart	03352/380 90-14	ulreich@u-t-b.at

Kooptiert

NÖ	Mst.	Ing.	Dominik	Dank, MBA	Lonischberggasse 5	3473	Mühlbach am Ma	0660/3228963	ddank@gmx.at
NÖ	KommR	Ing.	Klaus	Kronlechner	Zwanzigerstraße 15	9020	Klagenfurt	0463/57237	klaus.kronlechner@tertsche.at
NÖ	KommR	Ing.	Ernst	Kurri	Dr. Alexander Schärfstraße 12	2700	Wiener Neustadt	02622/23865	ernst@kurri.com
W		Mag.	Hermann	Sonnleitner	Laxenburger Str. 252/2	1230	Wien	01/604 19 80-0	hermann.sonnleitner@mt.com
W		Mag.	Wolfgang	Tschiedel	Börsoplatz 7	1010	Wien	01/533 21 00	tschiedel@fruehwald.net

Figure 4: Official list of BIAS participants of the Federal Guild of Mechatronics Engineers

2.1.5. INVITED EXTERNAL SPEAKERS

Both representatives of the 3LoE project partner Berufliche Hochschule Hamburg (BHH), Prof Dr Joachim Kiedrowski and Prof Dr Uwe Schaumann, were invited to the workshop as speakers. This chapter contains excerpts from the CVs of the two speakers from the Hamburg University of Cooperative Education (BHH). The full CVs can be accessed by clicking on their names.

Professor Dr Uwe Schaumann has been a university lecturer for general business administration, in particular HR management and HR development in SMEs, at Hamburg University of Cooperative Education (BHH) since August 2021.

From 2009 to 2021, he was employed at the Hamburg University of Cooperative Education as a professor of business administration specializing in human resources management and as commercial director.

From 2004 to 2009, he was deputy director of the Research Institute for Vocational Education and Training in the Skilled Crafts at the University of Cologne, where he was responsible for a variety of tasks and projects at the interface between vocational and academic education, with a particular focus on the training and further education of employees in small and medium-sized enterprises.

Previously, he worked as a research assistant at the Chair of Economic and Social Education at the University of Cologne.

In 1999, he obtained his doctorate in economics with the dissertation "Identity - a study in business and social education". In the mid-1990s, he graduated from the University of Cologne with a degree in business education.

Mr Schaumann has been working for many years on the integration of vocational and academic education in small and medium-sized enterprises.

Prof Dr Joachim von Kiedrowski is Vice President for Studies and Teaching at BHH.

From 2005 to 2021, he developed and implemented dual study programmes integrating vocational training at the Hamburg University of Cooperative Education.

In 2001, he completed his doctorate with a dissertation on "Learning platforms for e-learning processes of vocational training providers" and realised innovative qualification concepts in the e-learning sector with a start-up.

He graduated from the University of Cologne in 1997 with a degree in business education and business administration.
Joachim von Kiedrowski has been involved in many research and development projects in the field of e-Learning in vocational education and training and has written publications in this area as part of his activities, including at the Research Institute for Vocational Education and Training in the Skilled Crafts at the University of Cologne.

In recent years, his work has focused on the development of dual study programmes and the associated issues of integrating academic and vocational education. In addition, he has collaborated with the Baltic Sea Academy on international projects on entrepreneurship education.

3. REALIZATION OF THE WORKSHOP

The workshop took place on 6th June 2024 as part of the BIAS for mechatronics engineers in the "Reims" seminar room at the Arcotel Castellani, Alpenstraße 6, 5020 Salzburg.

3.1. WORKSHOP HELD - TIMETABLE

09:00 - 09:15 a.m.	Official welcome by BIM Ing. Andreas Kandioler Welcome, presentation EU project 3LoE, DI Heidrun Bichler-Ripfel, Institute Director, IAGF
09:15 - 09:30 a.m.	Transition "Mood Chart" & introduction "Dual study program", Aimie Jung, BSc, Project Manager, IAGF
09:30 - 10:30 a.m.	Presentation - Best Practice "Dual study program at the BHH", Prof Dr Uwe Schaumann Intensive discussion among all high-ranking participants

10:30 - 10:45 a.m. Break

10:45 am - 12:25 pm Continuation of the discussion in the entire group

12:25 - 12:30 pm Evaluation target & group photos

12:30 - 12:45 pm Press conference & photos

from 12:45 pm Lunch together

3.2. WORKSHOP HELD - CONTENT

Greeting
BIM Ing. Andreas Kandioler briefly introduced the procedure and suggested the "you-word-for-all" to make the discussion simpler and easier to organize.

Presentation EU project 3LoE
As head of the institute and organizer of the workshop, DI Heidrun Bichler-Ripfel also welcomed all participants and presented this workshop as a successful cooperation with a 3LoE partner, introducing the objectives, measures and results of the EU 3LoE project as well as the two other speakers.

Introduction & transition "Common wording - dual study program"
Aimie Jung, BSc, project manager at the IAGF, introduced the topic of "dual studies" with a brief comparison of the common wording in relation to "education, training and vocational training", including Austrian and German differences and special features, and visualized the two most common educational pathways in Austria: the school/academic pathway and dual (vocational) training, and explained which target groups are associated with them.

Presentation - results - e-mail dispatch
She then presented the results of the e-mail survey.

Around a third (31.01%) of a total of 29 participants responded to the e-mail survey.

A good third of the responses can be seen as a meaningful picture of the mood of the entire group. This was also confirmed by the discussion during the presentation of the results.

The first question in the e-mail survey was: "Which qualification path can I offer a young person (15 - 18-year-olds) in my company so that I am attractive to them?" - The given answers HTL, apprenticeship, study, other could be ticked. It was possible to tick more than one answer.

The result clearly showed that the traditional qualification path of an apprenticeship was offered by most of the respondents. The answers also showed that entrepreneurs are already familiar with a degree program and/or a technical college as a possible training path for their employees. Under "other", for example, "apprenticeship with Matura" or "don't have a company" were listed.

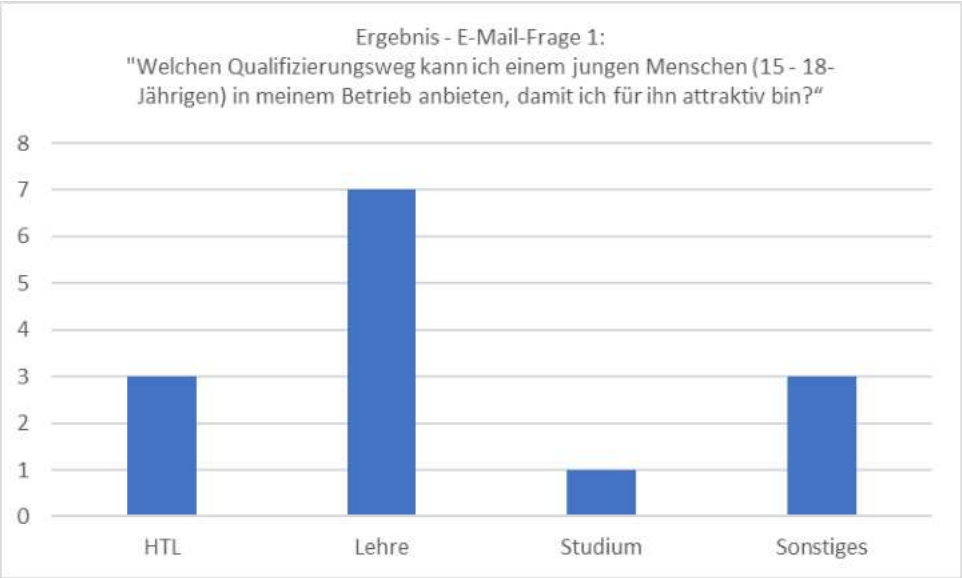


Figure 5: Answers to e-mail question 1

The second question was an open question and was: "Are we making progress with the traditional qualification programme in order to be sufficiently attractive for young people (15 - 18-year-olds) and at the same time retain enough skilled staff?"

The answers are summarised in Figure 6:

PRO	CONTRA	SUGGESTIONS FOR IMPROVEMENT
-> are doing well internationally, dual training as a model for other countries!	-> unfortunately not sufficient at present	Attractiveness -> e.g. adaptation to the needs of young people
-> Continuous educational pathways were the right improvements!	-> Due to demographic developments & migration to schools, we have too few people who can be trained.	Visualisation -> better and earlier communication in primary schools & improving the image of technology & innovative professions in society
-> are on the right track!	-> the poor image of teaching exacerbates the shortage!	Regular evaluation & adaptation of the qualification programmes

Figure 6: Overview of the answers to the 2nd question of the e-mail survey

The third question was intended to provide information on whether and how many participants were already familiar with dual study programmes. **The specific question number 3 was: "Are you familiar with the dual study programme at a university?" - There were three possible answers: Yes. No. I don't know, including the option to make additional comments.**

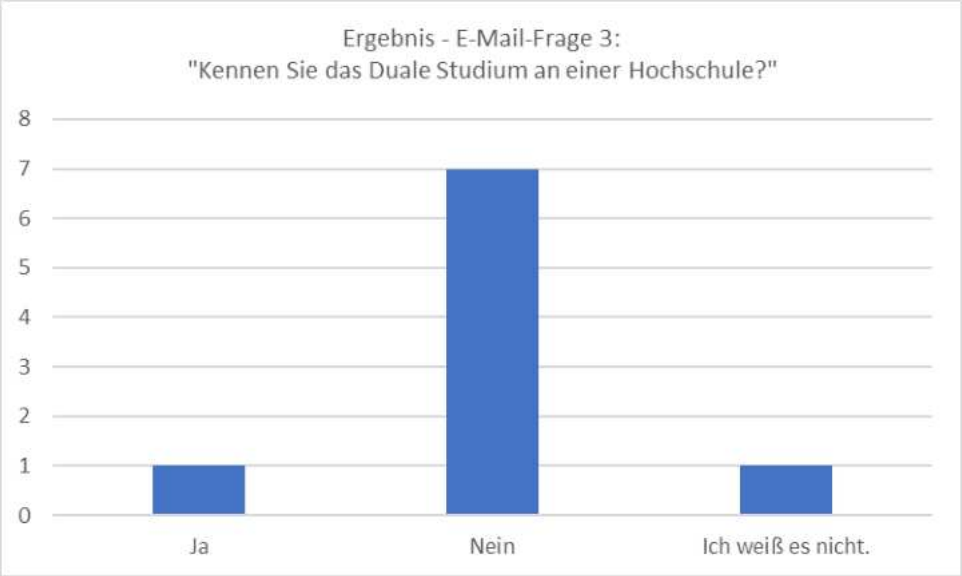


Figure 7: Answers to E-mail question No -3-

The answers to the third question showed a clear result: the majority of participants were not familiar with the dual study program at a university. An additional answer revealed that it had become difficult to keep track of the different educational pathways: "There are so many different options that it's getting a bit confusing. ... Dual study program, dual academy...".

The responses to the e-mail were important for the preparation of the workshop. This enabled the speakers to take the participants' experience and level of knowledge into account in advance.

Mood - Participants

To loosen things up and provide more in-depth information about the participants, Aimie Jung asked the participants to answer 5 questions with an active show of hands. This was achieved by including the next speaker, Uwe Schaumann, in the double conference and the participants actively participated in answering the questions by raising their hands and helping to count the votes together.

The questions and answers were as follows:

Mood -Questions	Number of entrepreneurs
How many employees do you have?	0 - 9: -8- 10 - 49: -5- 50 or more: -5-
Have you hired university graduates in the last 5 years?	YES: -1- NO: -
Have you dealt with the dovetailing of dual vocational training and degree programmes in the last 5 years?	YES: - 5 - NO: -

How many apprentices have you trained in the last 5 years?	≤ 5: -10- ≤ 10: -2- > 10 : -2-
Is the shortage of skilled labour a serious problem for you?	Very large: -6- Large: -9- Small: -3- No! None at all. -

Figure 8: Capture the mood! - Questions & Answers

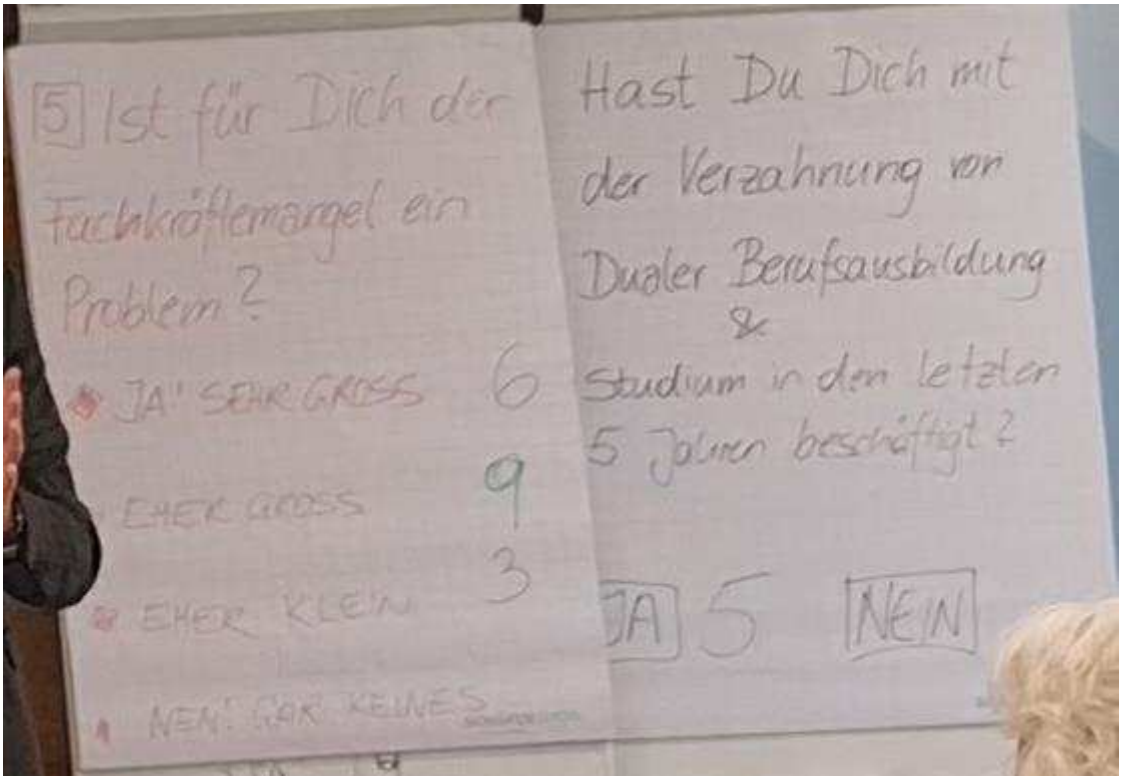


Figure 9: Capture the mood! - Screenshot of a flip chart survey -

Two-minute info video about the BHH

At the end of the presentation by Aimie Jung, BSc from the IAGF and as a transition to the lecture by and with Prof. Dr Uwe Schaumann from the BHH about the dual study program at the Hamburg University of Cooperative Education, a 2-minute info video was shown with the most important information about the study-integrated training at the Hamburg University of Cooperative Education. Here is the link: Home - Hamburg University of Cooperative Education (BHH), 20240715.

Dual study program - Challenges and opportunities - Best Practice - BHH

Under the title "What is a dual study program", Prof. Dr Uwe Schaumann explained different types of "dual study programs", the possible benefits and costs for entrepreneurs, discussed the special features of the best practice "dual study program at the Hamburg Vocational College" - with its interlinked content and time phase planning at three training locations (training company, vocational school and university of applied sciences) as well as the changing values of the different generations X, Y and Z in the world of work and what entrepreneurs need to know about this when finding and retaining employees.

Details as external pdf supplement

Detailed information on the presentation can be found in the external supplement "3LoE-Salzburg-siA-duales-Studium-BHH-final.pdf".

Stimulating discussion round - change to the planned program sequence
From the outset, it became clear that the participants were very interested and asked specific questions in order to better understand the background and contexts and to be able to sound out possible implementation options.

Due to the stimulating discussion, the speakers decided to give free rein to the discussion and to cancel the planned "world cafe" and instead give more space and time to the joint discussion so that the open questions could also be answered in depth. Based on his more than 20 years of experience, Prof Uwe Schaumann was able to provide numerous constructive practical examples for implementation and was able to answer and resolve any questions or problems.

3.3. PARTICIPANTS

A high-caliber group of experts, multipliers from all over Austria consisting of representatives of numerous provincial guilds, officials, entrepreneurs, members of BIAS and the further training committee were present.

Almost all of the registered experts were able to take part in the workshop, which can be seen as a sign of the great interest and commitment of this professional group to their concerns, such as good vocational training for their employees.

A total of 32 multipliers - including the speakers - 29 multipliers without speakers - took part and contributed to the workshop:

Quantity	Participant group
20	Entrepreneurs
7	Company representatives of the WKO
2	Guests
3	Lectures
32	Total

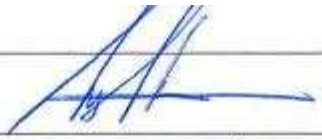
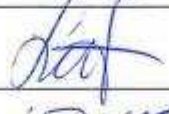
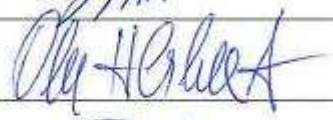
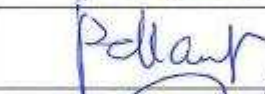
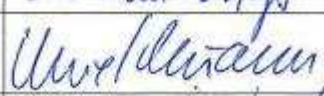
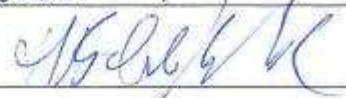
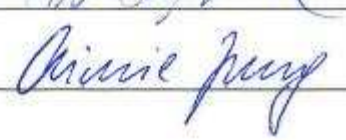
Figure 10: Type and number of workshop participants

The signed three-page list of participants in Figure 11 below details the name, function and federal state of the respective area of activity.

„Workshop - Duales Studium - Mechatroniker" -
Im Rahmen der Bundesinnungs-Sitzung (BIAS) der Mechatroniker
am Donnerstag 06.06.2024 09:00 - 12:30 **Uhr**
im ARCOTEL Castellani, Alpenstrasse 6, 5020 Salzburg

Bundesland	Name	Funktion	Unterschrift
W/WKO	Ing. DI Christian Atzmüller	Bundesgeschäftsführer, BI Mechatroniker	
S	Ing. Michael Breckner	LIM-Stv. Salzburg, BIAS	
St	Johannes Binder	LIM-Stv. Steiermark, BIAS	
V	Walter Bösch	Obmann/LIM Vorarlberg, BIAS	
St	Mst. Herbert Brunner	BIM-Stv., LIM Steiermark, KommR., BIAS	
W NÖ	Mst. Ing. Dominik Dank, MBA	BIAS	
K	Ing. Harald Dullnig	LIM Kärnten, BIAS	
S	Martin Fagerer	LIM Salzburg, BIAS	
OÖ	DI Wolfgang Gaßner	BIAS	
NÖ	Dipl.,-HTL-Ing. Harald Graf	LIM-Stv. NÖ, KommR, BIAS	
NÖ	Martin Graf	Gast	
W/WKO	Mst. DI Andreas Gruber	Referent, WKO, Metalltechniker, BI	
WK Vorarlberg	Lucia Kalkhofer-Hammling	Mitarbeiterin, Wirtschaftskammer Vorarlberg, Sparte Gewerbe und Handwerk	entschuldigt

1

NÖ	Ing. Andreas Kandioler	BIM, LIM, KommR., BIAS	
T	Mst. Werner Klingler	LIM, BIAS	
WKNÖ	Dr. Birgitta Haltmeyer	Innungsgeschäftsführerin, LI der Metalltechniker NÖ	
NÖ	Ing. Ernst Kurri	KommR, BIAS	
B	Ing. Robert Liszt	BIAS	
W	Ing. Peter Merten	LIM, KommR, BIAS	
W/WKO	Dr. Paul Morolz	Referent, WKO, Metalltechniker, BI	
B	Mst. Herbert Ohr	BIM-Stv., LIM Burgenland, KommR, BIAS	
WK Wien	Mag. Leonhard Palden	Fachgruppengeschäftsführer, Wirtschaftskammer Wien, Fahrzeughandel, Landesgremium Wien	
WK Salzburg	Mag. Priska Pallauf-Lorenzoni	Fachgruppengeschäftsführerin, Wirtschaftskammer Salzburg, Kunststoffverarbeiter, Fachvertretung	
W	Mst. Ing. Sonja Reumüller	LIM-Stv., BIAS	
T	Ing. Albert Siebenförcher	LIM-Stv., BIAS	
OÖ	August Stockinger	LIM, KommR, BIAS	
WK Tirol	Mag. Eva Maria Stotter	Fachgruppengeschäftsführerin, Wirtschaftskammer Tirol, Branchenverbund Technik	
W	Mag. Wolfgang Tschiedel	BIAS	
B	Ing. Ingmar Ulreich	LIM-Stv., BIAS	
BHH/D	Prof. Uwe Schaumann	Externer Experte/Duales Studium, Berufliche Hochschule Hamburg	
W/NÖ	DI Heidrun Bichler-Ripfel	IAGF/Institut für angewandte Gewerbeforschung	
W/NÖ	Almie Jung, BSc	IAGF/Institut für angewandte Gewerbeforschung	

NÖ	Mst Ernst Luef	Gast	Ernst Luef

Figure 11: Signed list of participants (3 pages)

3.4. EXTERNAL SPEAKER - 3LOE PROJECT PARTNER

A high-caliber, confident group of experts met with Prof. Dr Uwe Schaumann, an expert from the education sector with 20 years of experience in the development and implementation of dual study programs. This was clearly evident throughout the discussion.

Prof Dr Uwe Schaumann from the Hamburg University of Cooperative Education was able to respond to the specific questions, needs, concerns and wishes of the entrepreneurs with great care and expertise.

His long-standing collaboration with Prof Dr Joachim von Kiedrowski was incorporated into the preparations in spirit. The newly appointed Vice President for Studies and Teaching at Hamburg University of Applied Sciences (BHH) in 2024 was unable to attend in person due to time constraints.

Details on Prof Dr Uwe Schaumann can be found in section 2.1.1.

3.5. SUPPORTING PROGRAMME – SPECIALS

This workshop took place as part of the BIAS for mechatronics engineers. This has traditionally taken place over three days for years. BIM engineer Andreas Kandioler always attaches great importance to the first day of the meeting being heralded by innovation events. The day before the meeting is used for personal networking. It is important to the group that partners can also travel with them. A separate program can be arranged for them on request. The BIAS Days are organised locally by the respective regional guild, in 2024 by LI Salzburg.

On 5 June 2024, there was an excursion to the "Salzburg Open-Air Museum in Großgmain" to get to know each other again and to network. This was followed by lunch together at Gasthof Maria Plain. This was followed by networking over drinks on the terrace of the hotel.

The high value placed on networking showed that the discussion round was conducted with a great deal of mutual trust, very openly, emotionally, critically and objectively.

4. EVALUATION

Figure 12 shows the result of the target evaluation. 29 participants were able to evaluate eight criteria. Between 20 and 25 ratings were given for each individual criterion.

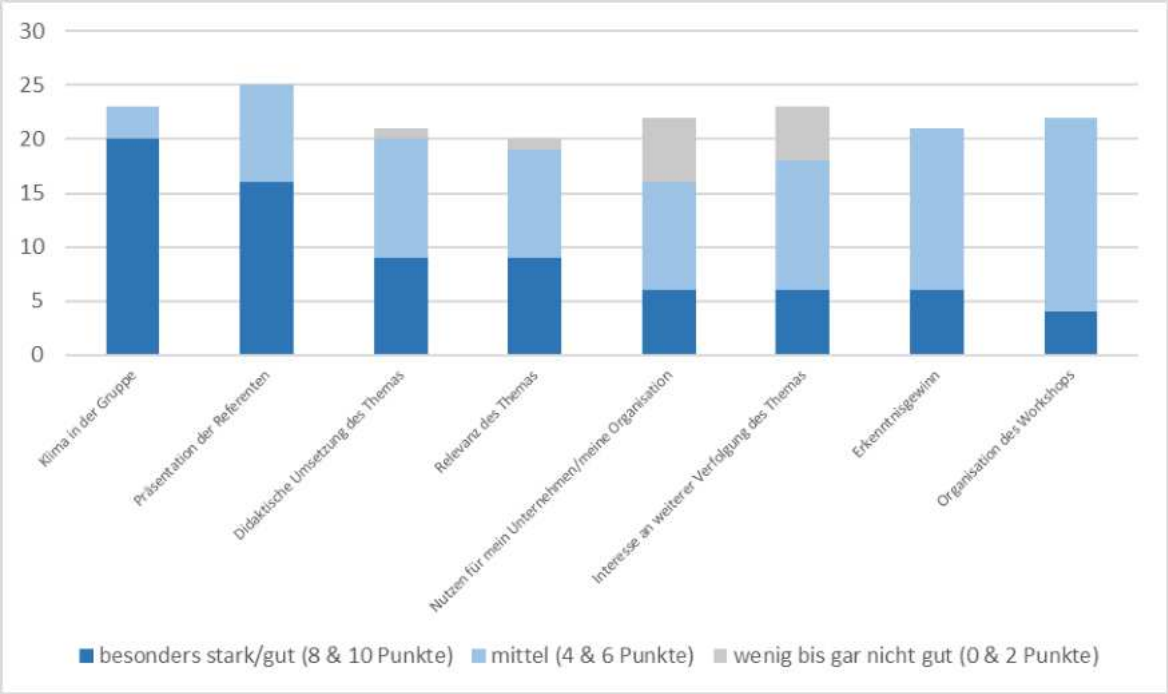


Figure 12: Result of the target evaluation

The target evaluation was carried out as follows. Immediately after the end of the workshop, the participants were asked to evaluate the workshop spontaneously, quickly and rapidly using a target evaluation.

As with a target, the maximum number of points awarded would be in the centre; the further out the points are, the lower the number of points awarded. The highest number of points was 10 and meant a positive rating such as "very good/much/high". 0 - the lowest number of points - meant "very poor/low/low.
An approx. A-0-sized target with 8 fields was attached to a pin board in which the following criteria could be evaluated:

1) Climate in the group
2) Relevance of the topic
3) Gain in knowledge
4) Didactic realisation of the topic
5) Interest in pursuing the topic further
6) Organisation of the workshop
7) Presentation of the speakers
8) Benefits for my company/organisation

The participants were given thick coloured pencils for the assessment. A maximum of one point could be awarded per criterion. Figure 13 shows the (intentionally) handwritten poster of the evaluation target disc, so that a personal and active note could be captured by the participants and variety could be brought into the workshop process.

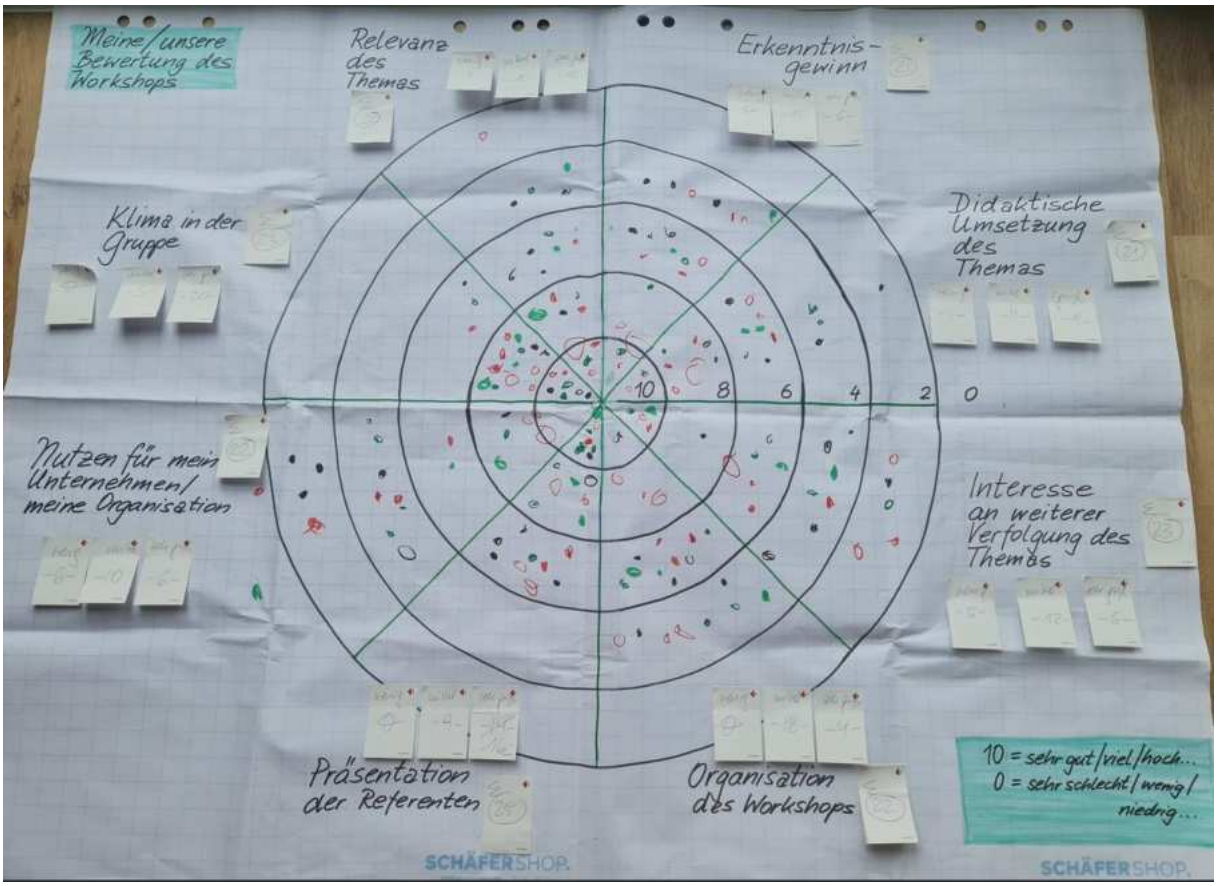


Figure 13: Evaluation target disc for the "Mechatronics engineer dual study programme" workshop

5. OUTLOOK AND CONTINUATION

The high calibre of the workshop participants, the great expertise of the speakers and the intensive discussions showed that the workshop raised a topic that met with great interest and struck a chord with the times. Further discussions after the workshop emphasise the positive outcome of the workshop and its stimulating effect.

Further in-depth events are already planned for Styria.

In a nutshell: The dual study program for mechatronics offers a promising solution for training future specialists. By combining practical and academic training in a compact and well-structured program, both the requirements of companies and the needs of students are met. The positive response from participants and the successful realisation of the workshop show the great interest and need for such educational innovations.

6. SOURCES

Online

Hamburg University of Cooperative Education (Website): Home - Hamburg University of Cooperative Education (BHH); 20240715

Career information (BIC.at): Apprenticeship in mechatronics: BIC.at - Mechatronics (modular apprenticeship) - Apprenticeship period: 3 1/2 or 4 years; 20240715

Federal Act on Higher Vocational Education and Training in Austria (in force since 1 May 2024): Federal Act on Higher Vocational Education and Training (293/ME) | Parliament Austria; 20240715

Dual study programmes in Austria: Dual study programmes in Austria; 20240715

Apprenticeship as a mechatronics technician in Austria (WKO): Apprenticeship in mechatronics (modular apprenticeship) - WKO; 20240715

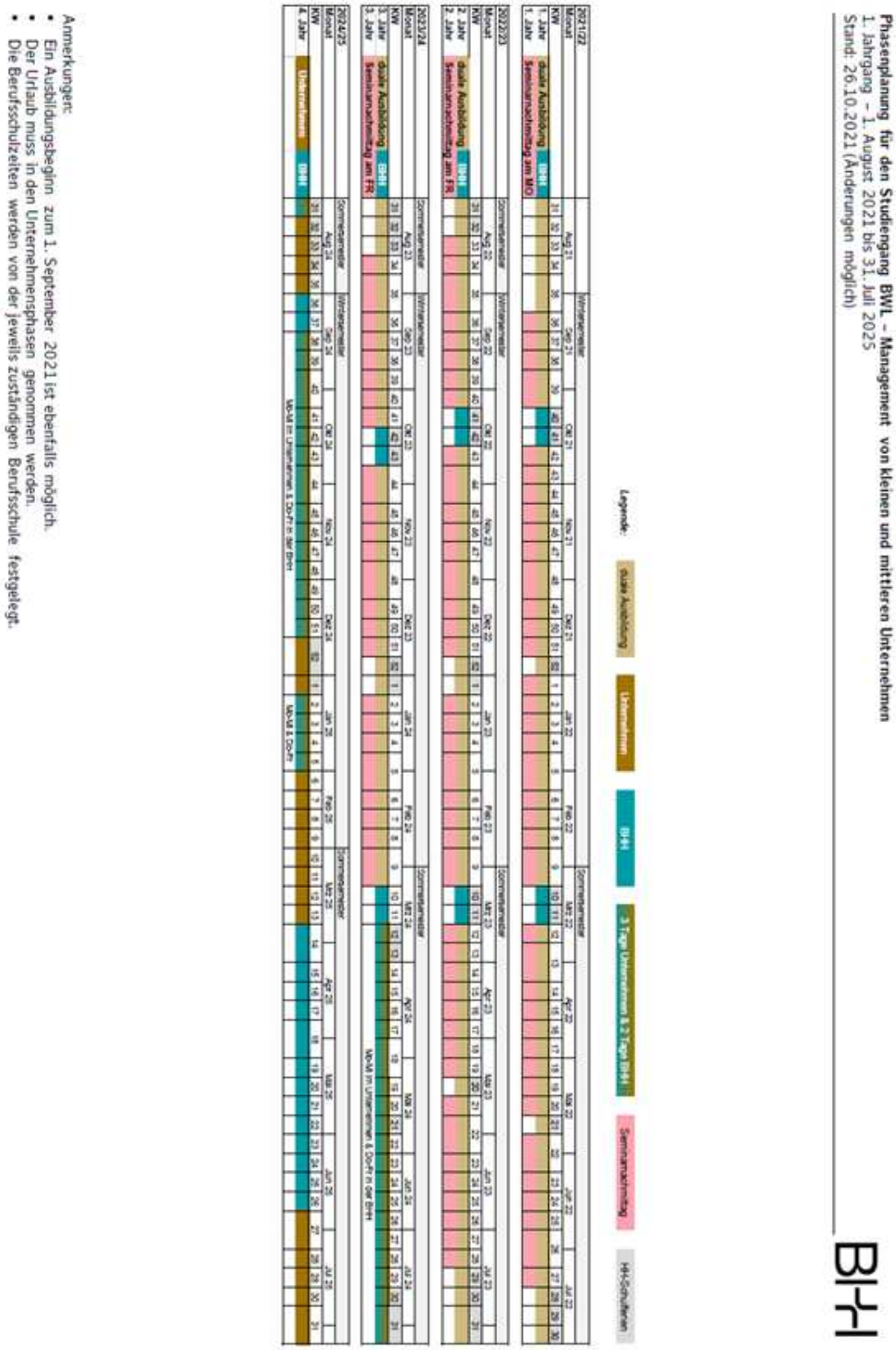
Wegweiser-Duales-Studium (D): Time models in dual study programmes - block, week, part-time (wegweiser-duales-studium.de); 20240715

Other sources:

3LoE/IAGF report (2024): Report "Dual study programmes - Interlocking and permeability of vocational and academic education" (also available as an external supplement)

7. APPENDIX

7.1. BHH PHASE PLANNING - 1ST YEAR - START 2021



Phase	*duale Ausbildung* (Unternehmen & Berufsschule*)	*BHH*	*BHH-Seminarnachmittage***
Phase 1	02.08.-03.10.2021		06.09.2021-10.07.2022 Die Seminarnachmittage an der BHH finden jeweils am Montagnachmittag statt
		04.10.-17.10.2021	
	18.10.2021-06.03.2022		
		07.03.-20.03.2022	
	21.03.-09.10.2022		
		10.10.-23.10.2022	15.08.2022-03.03.2024 Die Seminarnachmittage an der BHH finden jeweils am Freitagnachmittag statt
	24.10.2022-05.03.2023		
		06.03.-19.03.2023	
	20.03.-15.10.2023		
		16.10.-29.10.2023	
	30.10.2023-03.03.2024		

Phase	*Unternehmen* (Mo-Fr)	*BHH* (Mo-Fr)	*Unternehmen* (Mo-Mi) & *BHH* (Do-Fr)
Phase 2		04.03.-17.03.2024	
			18.03.-04.08.2024
	05.08.-01.09.2024		
		02.09.-15.09.2024	
			16.09.-22.12.2024
	23.12.2024-05.01.2025		
			06.01.-02.02.2025
	03.02.-30.03.2025***		
		31.03.-29.06.2025	
	30.06.-31.07.2025		
	Gemeinsamer Abschluss bzw. Verabschiedung in der 31. Kalenderwoche. Die Zeugnisübergabe ist für Ende August 2025 geplant.		

* Die Berufsschulzeiten werden von der jeweils zuständigen Berufsschule festgelegt.
** Während der BHH-Blockwochen und in den Hamburger Schulferien finden in der Regel keine Seminarnachmittage statt.
*** Diese Zeit ist regelhaft für die Anfertigung der Bachelorarbeit vorgesehen.

Anmerkungen:
- Ein Ausbildungsbeginn zum 1. September 2021 ist ebenfalls möglich.
- Der Urlaub muss in den Unternehmensphasen genommen werden.

7.2. BHH PHASE PLANNING - 2ND YEAR - START 2022

Anmerkungen:

- Ein Ausbildungsbeginn zum 1. September 2022 ist ebenfalls möglich.
- Der Urlaub muss in den Unternehmensphasen genommen werden.
- Die Berufsschulzeiten werden von der jeweils zuständigen Berufsschule festgelegt.

7.3. BHH PHASE PLANNING - 3RD YEAR - START 2023

Phasenplanung für den Studiengang BWL –
Management von kleinen und mittleren Unternehmen
2. Jahrgang – 1. August 2022 bis 31. Juli 2026
Stand: 27.03.2023 (Änderungen möglich)

BHH

Phase	*duale Ausbildung* *(Unternehmen & Berufsschule*)*	*BHH* *Vollzeit*	*Seminarnachmittage***
Phase 1	01.08.-09.10.2022		05.09.2022-16.07.2023 Die Seminarnachmittage an der BHH finden jeweils am Montagnachmittag statt
		10.10.-23.10.2022	
	24.10.2022-05.03.2023		
		06.03.-19.03.2023	
	20.03.-15.10.2023		21.08.2023-21.07.2024 26.08.2024-02.03.2025 Die Seminarnachmittage an der BHH finden jeweils am Freitagnachmittag statt
		16.10.-29.10.2023	
	30.10.2023-17.03.2024		
		18.03.-31.03.2024	
	01.04.-20.10.2024		
		21.10.-03.11.2024	
	04.11.2024-02.03.2025		

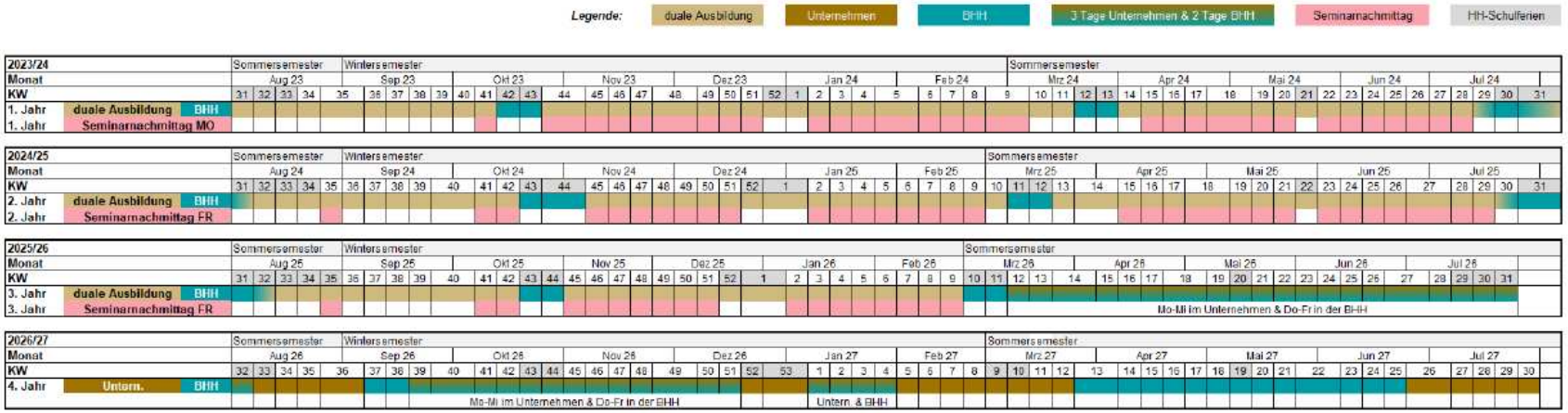
Phase	*Unternehmen* *(Vollzeit)*	*BHH* *(Vollzeit)*	*Unternehmen (Mo-Mi) & BHH (Do-Fr)*
Phase 2		03.03.-16.03.2025	
			17.03.-03.08.2025
	04.08.-31.08.2025		
		01.09.-14.09.2025	
			15.09.-21.12.2025
	22.12.2025-04.01.2026		
			05.01.-01.02.2026
	02.02.-29.03.2026***		
		30.03.-28.06.2026	
	29.06.-31.07.2026		
	Gemeinsamer Abschluss bzw. Verabschiedung in der 31. Kalenderwoche. Die Zeugnisübergabe ist für Ende August 2026 geplant.		

* Die Berufsschulzeiten werden von der jeweils zuständigen Berufsschule festgelegt.
** Während der BHH-Blockwochen und in den Hamburger Schulferien finden in der Regel keine Seminarnachmittage statt.
*** Diese Zeit ist regelhaft für die Anfertigung der Bachelorarbeit vorgesehen.

Anmerkungen:
- Ein Ausbildungsbeginn zum 1. September 2022 ist ebenfalls möglich.
- Der Urlaub muss in den Unternehmensphasen genommen werden.

Phasenplanung für den Studiengang BWL – Management von kleinen und mittleren Unternehmen
3. Jahrgang – 1. August 2023 bis 31. Juli 2027
Stand: 27.03.2023 (Änderungen möglich)

BHH



Anmerkungen:

- Ein Ausbildungsbeginn zum 1. September 2023 ist ebenfalls möglich.
- Der Urlaub muss in den Unternehmensphasen genommen werden.
- Die Berufsschulzeiten werden von der jeweils zuständigen Berufsschule festgelegt.

Co-funded by the Erasmus+ Programme of the European Union

3LoE

INSTITUT FÜR ANGEWANDTE GEWERBEFORSCHUNG

Phase	*duale Ausbildung* *(Unternehmen & Berufsschule*)*	*BHH* *Vollzeit*	*Seminarnachmittage***
Phase 1	01.08.-15.10.2023		09.10.2023-03.03.2024 08.04.-14.07.2024 26.08.2024 Die Seminarnachmittage an der BHH finden jeweils am Montagnachmittag statt
		16.10.-29.10.2023	
	30.10.2023-17.03.2024		
		18.03.-31.03.2024	
	01.04.-17.07.2024		
		18.07.-31.07.2024	
	01.08.-20.10.2024		07.10.2024-02.03.2025 07.04.-20.07.2025 29.08.2025 06.10.2025-01.03.2026 Die Seminarnachmittage an der BHH finden jeweils am Freitagnachmittag statt
		21.10.-03.11.2024	
	04.11.2024-09.03.2025		
		10.03.-23.03.2025	
	24.03.-23.07.2025		
		24.07.-06.08.2025	
	07.08.-19.10.2025		
		20.10.-02.11.2025	
	03.11.2025-01.03.2026		

Phase	*Unternehmen* *(Vollzeit)*	*BHH* *(Vollzeit)*	*Unternehmen (Mo-Mi) & BHH (Do-Fr)*
Phase 2		02.03.-15.03.2026	
			16.03.-09.08.2026
	10.08.-06.09.2026		
		07.09.-20.09.2026	
			21.09.-20.12.2026
	21.12.2026-03.01.2027		
			04.01.-31.01.2027
	01.02.-28.03.2027***		
		29.03.-27.06.2027	
	28.06.-31.07.2027		
	Gemeinsamer Abschluss bzw. Verabschiedung in der 30. Kalenderwoche. Die Zeugnisübergabe ist für Ende August 2027 geplant.		

* Die Berufsschulzeiten werden von der jeweils zuständigen Berufsschule festgelegt.
** Während der BHH-Blockwochen und in den Hamburger Schulferien finden in der Regel keine Seminarnachmittage statt.
*** Diese Zeit ist regelhaft für die Anfertigung der Bachelorarbeit vorgesehen.

Anmerkungen:
- Ein Ausbildungsbeginn zum 1. September 2023 ist ebenfalls möglich.
- Der Urlaub muss in den Unternehmensphasen genommen werden.

7.4. BHH PHASE PLANNING - 4TH YEAR - START 2024

Anmerkungen:

- Ein Ausbildungsbeginn zum 1. September 2024 ist ebenfalls möglich.
- Der Urlaub muss in den Unternehmensphasen genommen werden.
- Die Berufsschulzeiten werden von der jeweils zuständigen Berufsschule festgelegt.

Phase	*duale Ausbildung* *(Unternehmen & Berufsschule*)*	*BHH* *Vollzeit*	*BHH* *Seminarnachmittage***
Phase 1	01.08.-20.10.2024		07.10.2024-02.03.2025 07.04.-27.07.2025 25.08.2025 Die Seminarnachmittage an der BHH finden jeweils am Montagnachmittag statt
		21.10.-03.11.2024	
	04.11.2024-09.03.2025		
		10.03.-23.03.2025	
	24.03.-23.07.2025		
		24.07.-06.08.2025	
	07.08.-19.10.2025		06.10.2025-05.07.2026 28.08.2026 05.10.2026-28.02.2027 Die Seminarnachmittage an der BHH finden jeweils am Freitagnachmittag statt
		20.10.-02.11.2025	
	03.11.2025-01.03.2026		
		02.03.-15.03.2026	
	16.03.-08.07.2026		
		09.07.-22.07.2026	
	23.07.-18.10.2026		
		19.10.-01.11.2026	
	02.11.2026-28.02.2027		

Phase	*Unternehmen* *(Vollzeit)*	*BHH* *(Vollzeit)*	*Unternehmen (Mo-Mi) & BHH (Do-Fr)*
Phase 2		01.03.-14.03.2027	
			15.03.-08.08.2027
	09.08.-05.09.2027		
		06.09.-19.09.2027	
			20.09.-19.12.2027
	20.12.2027-02.01.2028		
			03.01.-06.02.2028
	07.02.-02.04.2028***		
		03.04.-02.07.2028	
	03.07.-31.07.2028		
	Gemeinsamer Abschluss bzw. Verabschiedung in der 30./31. Kalenderwoche. Die Zeugnisübergabe ist für Ende August 2028 geplant.		

* Die Berufsschulzeiten werden von der jeweils zuständigen Berufsschule festgelegt.

** Während der BHH-Blockwochen und in den Hamburger Schulferien finden in der Regel keine Seminarnachmittage statt.

*** Diese Zeit ist regelhaft für die Anfertigung der Bachelorarbeit vorgesehen.

Anmerkungen:

- Ein Ausbildungsbeginn zum 1. September 2024 ist ebenfalls möglich.
- Der Urlaub muss in den Unternehmensphasen genommen werden.

8. EXTERNAL SUPPLEMENTS

8.1. REPORT "DUAL STUDY PROGRAM. INTERLOCKING AND PERMEABILITY OF VOCATIONAL AND ACADEMIC EDUCATION"

As part of the work package WP5 A2.3, the 3LoE project partner PP13 IAGF carried out a survey in German-speaking countries (Austria, Switzerland, Germany) - best case examples, scientific literature and symposia/specialist conferences on the topic of “Interlocking and permeability of vocational and academic education” as a first step in accordance with the 3LoE activity plan.

8.2. PRESENTATION - UWE SCHAUMANN "3LOE-SALZBURG-SIA-DUALES-STUDIUM-BHH"

Under the title "What is a dual study program", Prof. Dr Uwe Schaumann explains different types of "dual study programs", possible benefits and costs for entrepreneurs, discusses the special features of the best practice "dual study program at the Hamburg University of Cooperative Education" with its interlinked content and time phase planning at the three training locations (training company), vocational school and university of applied sciences, as well as the changing values of the different generations X, Y and Z in the world of work and what entrepreneurs need to know about this when finding and retaining employees.