



**KULTUSMINISTER
KONFERENZ**

Framework curriculum for the Apprenticeships

IT specialist and IT specialist

IT system electronics technician

(Resolution of the Conference of Ministers of Education and Cultural Affairs of 13.12.2019)

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Part I Preliminary remarks

This framework curriculum for vocational education and training at vocational schools has been adopted by the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder and coordinated with the corresponding federal training regulations (issued by the Federal Ministry for Economic Affairs and Energy or the competent ministry in agreement with the Federal Ministry of Education and Research).

The framework curriculum is basically based on the level of the lower secondary school leaving certificate or comparable qualifications. It does not contain any methodological specifications for teaching. The framework curriculum describes occupation-related minimum requirements with regard to the qualifications to be acquired.

The federal training regulations and the framework curriculum of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder as well as the curricula of the Länder for the inter-occupational learning area regulate the objectives and content of vocational training. On this basis, the pupils acquire a qualification in a recognised training occupation and a vocational school certificate.

The Länder adopt the framework curriculum directly or implement it in their own curricula. In the second case, they ensure that the specifications of the framework curriculum for subject-related and temporal coordination with the respective training regulations are maintained.

Part II Educational mission of the vocational school

The vocational school and the training companies fulfil a joint educational mandate in dual vocational training.

The vocational school is an independent place of learning that operates on the basis of the framework agreement on the vocational school (resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany of 12 March 2015, as amended). It works as an equal partner with the other parties involved in vocational education and training and has the task of enabling the pupils to strengthen job-related and cross-occupational skills. In this way, the pupils are enabled to fulfil their tasks at work and to sustainably contribute to shaping the world of work and society in a socially, economically, ecologically and individually responsible manner, especially against the background of changing requirements. This includes the promotion of young people's competences

- for personal and structural reflection,
- to deal with future-oriented technologies, digitally networked media and data and information systems in a responsible and autonomous manner,
- act adequately in professional and technical language situations,
- to lifelong learning as well as professional and individual flexibility to cope with the changing demands in the world of work and society,
- on professional mobility in Europe and a globalised world

on.

Instruction at the vocational school is based on the federally uniform regulations issued for each state-recognised training occupation. In addition, the regulations and school laws of the Länder issued for the vocational school apply.

In order to fulfil its educational mandate, the vocational school must ensure a differentiated educational offer that

- develop action-oriented learning arrangements in didactic planning for the school year that are coordinated with in-company training,
- enables teaching with appropriate individual support against the background of the different experiences, abilities and talents of all pupils,
- promotes individual and self-organised learning in the digital world,
- takes into account the promotion of educational, vocational and technical language competence,
- supports sustainable development of the working and living environment and self-determined participation in society,
- sensitised to health maintenance and accident risks,
- provides an overview of educational and professional development perspectives, including entrepreneurship, to support self-responsible career and life planning,
- is aligned with the relevant scientific findings and results with regard to competence development and competence assessment.

The central aim of vocational school is to promote the development of comprehensive action competence. Action competence is understood as the readiness and ability of the individual to behave in professional, social and private situations in an appropriately thought-out and individually and socially responsible manner.

Action competence unfolds in the dimensions of professional competence, self-competence and social competence.

Professional competence

Willingness and ability to solve tasks and problems in a goal-oriented, appropriate, methodical and independent manner on the basis of professional knowledge and skills and to assess the result.

Self-competence¹

Willingness and ability, as an individual personality, to clarify, think through and assess development opportunities, requirements and restrictions in family, work and public life, to develop one's own talents and to make and develop life plans. It includes qualities such as independence, critical faculties, self-confidence, reliability, sense of responsibility and duty. It also includes, in particular, the development of well thought-out values and self-determined commitment to values.

Social competence

Willingness and ability to live and shape social relationships, to grasp and understand attentions and tensions, and to engage and communicate with others rationally and responsibly. This includes in particular the development of social responsibility and solidarity.

Methodological competence, communicative competence and learning competence are immanent parts of professional competence, self-competence and social competence.

Methodological competence

Willingness and ability to proceed in a targeted, planned manner when dealing with tasks and problems (for example, when planning work steps).

Communicative competence

Willingness and ability to understand and shape communicative situations. This includes perceiving, understanding and presenting one's own intentions and needs as well as those of the partners.

Learning competence

Willingness and ability to understand and evaluate information about facts and contexts independently and together with others and to classify it in mental structures. Learning competence also includes, in particular, the ability and willingness to develop learning techniques and learning strategies at work and beyond the professional sphere and to use these for lifelong learning.

¹ The term "self-competence" replaces the previously used term "human competence". It takes greater account of the specific educational mandate of the vocational school and picks up on the systematisation of the DQR.

Part III Didactic Principles

In order to fulfil the educational mandate of the vocational school, young people are enabled to independently plan, carry out and assess work tasks within the framework of their occupation.

Learning in vocational school aims at the development of comprehensive action competence. With the didactically justified practical implementation - or at least the intellectual penetration - of all phases of a vocational action in learning situations, learning is carried out in and from work.

Action-oriented teaching within the framework of the learning field concept is primarily oriented towards action-systematic structures and represents a changed perspective compared to primarily subject-systematic teaching. According to learning theory and didactic findings, the following points of orientation are to be taken into account when planning and implementing action-oriented teaching in learning situations:

- Didactic reference points are situations that are significant for professional practice.
- Learning takes place in complete actions, preferably carried out by oneself or at least mentally reproduced.
- Actions promote a holistic grasp of professional reality in an increasingly globalised and digitalised world of life and work (for example, ecological, legal, technical, safety-related, professional, technical and foreign language, social and ethical aspects).
- Actions draw on learners' experiences and reflect on them in terms of their social impact.
- Actions also take into account social processes, for example the declaration of interests or conflict resolution, as well as different perspectives on career and life planning.

Part IV Job-related preliminary remarks

This framework curriculum for the vocational training programmes for IT specialists in the fields of application development, system integration, data and process analysis and digital networking as well as for IT system electronics technicians is coordinated with the ordinances on vocational training for IT specialists of 28 February 2020 (Federal Law Gazette I p. 250) and for IT system electronics technicians of 28 February 2020 (Federal Law Gazette I p. 268). The regulations on vocational training for IT systems electronics technicians of 28 February 2020 (BGBl. I p. 250) and for IT systems electronics technicians of 28 February 2020 (BGBl. I p. 268).

The framework curricula for the training occupations of IT specialist (decision of the Standing Conference of the Ministers of Education and Cultural Affairs of 25 April 1997) and information and telecommunications systems electronics technician (decision of the Standing Conference of the Ministers of Education and Cultural Affairs of 25 April 1997) are repealed by this framework curriculum.

The competences required for the examination area of economics and social studies are taught on the basis of the "Elemente für den Unterricht der Berufsschule im Bereich Wirtschafts- und Sozialkunde gewerblich-technischer Ausbildungsberufe" (Elements for teaching economics and social studies at vocational schools for industrial and technical occupations) (resolution of the Conference of Ministers of Education and Cultural Affairs of 7 May 2008).

In addition to the occupational profile (Federal Institute for Vocational Education and Training at <http://www.bibb.de>), the following aspects are important in vocational school teaching:

IT specialists and IT system electronics technicians are employed in different business sectors across all industries, which means that the focus of the occupational fields of action can diverge significantly. Typical occupational fields of action for technical IT occupations are the creation of applications for handling data, workplaces and digitally networked systems and handing them over to customers. Depending on the occupational focus, new developments or modifications to hardware and software are carried out. The skilled workers communicate with customers and employees in an appropriate manner in technical support as well as during consultation, commissioning and handover. In the advancing digital networking, the construction and development of cyber-physical systems and the implementation of machine learning and artificial intelligence in applications and systems, both professions and the specialisations work closely together and with the commercial IT professions.

IT specialists in the field of application development focus on the project planning and development of software solutions, taking information security into account. Development processes take place using agile, networked and multidisciplinary methods. In addition, appropriate programming paradigms, languages and environments are selected for the respective project.

IT specialists specialising in system integration focus on the planning, installation, configuration, commissioning and administration of networked systems. These systems are developed, modified and operated taking into account information security, services are implemented and faults are limited and remedied.

IT specialists specialising in data and process analysis focus on the development of machine learning systems, the analysis of processes and data for the optimisation of digital business processes and the

Integration of new digital business models, in each case taking into account information security.

IT specialists in the field of digital networking focus on the development, commissioning and support of digitally networked processes, applications and products, taking information security into account. This involves creating new cyber-physical systems and their software or combining and networking existing systems to create new solutions.

IT system electronics technicians focus on the planning, configuration and commissioning of systems and their power supply. They support the creation of customer-specific cyber-physical and digitally networked systems by modifying the hardware and adapting the software, as well as providing technical support for these systems, in each case taking information security into account.

The learning fields are oriented towards these vocational fields of action. They are to be implemented methodically and didactically in such a way that they lead to comprehensive professional competence. This includes, in particular, sound specialist knowledge, communicative skills, networked and analytical thinking, initiative, empathy and the ability to work in a team. In view of the short innovation cycles in the area of development methods, technical drivers and applications, IT professions require a high degree of self-organisation and learning skills.

The competences formulated in the learning fields describe the qualification level at the end of the learning process and represent the minimum scope. Contents are only listed in italics if the competences described in the target formulations are to be concretised or restricted. The learning fields build on each other in a spiral curriculum.

The acquisition of competences in the context of digital work and business processes is an integrative component of the technical competences and also develops in interdisciplinary competence dimensions. The use of information technology systems and the use of digital media are integrated components of the learning fields and are particularly pronounced in the teaching of IT occupations. Where relevant, they are shown separately in individual learning fields.

The acquisition of foreign language competence is integrated in the learning fields.

The learning fields take into account the dimensions of sustainability - economy, energy efficiency, ecology and social issues - economic thinking, socio-cultural differences and self-determined participation in society. In the IT occupations, there is also a special focus on ethical implications that arise in the use of autonomous systems and in the handling of sensitive data from data mining.

In the training occupation of IT systems electronics technician, the promotion of competences for connecting IT systems to the power supply already begins in learning field 2. Here, measures for protection against electrical hazards, power requirements and cable dimensioning are a focus. The promotion of competences in the field of electrical engineering is continued in the further years of training, especially in learning fields 7, 10 and 11.

Practical and job-related learning situations take a central position in lesson design. The diversity of sectors should be taken into account. In the framework curriculum

the term "customer" is used for persons or groups within the company as well as for external customers. In the context of the framework curriculum, IT systems are understood to be any type of electronic data processing system that can be used to solve existing problems with the necessary software, hardware and associated services. The extension to networked systems includes the cyber-physical components, which only become an IT system when they are accessed by means of hardware and software.

Both technical IT occupations share a common basis of cross-occupational competences with the commercial IT occupations (digitalisation management assistants and IT system management assistants). These are mainly acquired in the first year of training. For this reason, there is the possibility of joint training in the first year of training for the IT occupations, as learning fields 1 to 5 are formulated identically in the respective framework curricula. In the second year of training, this also applies to learning field 6.

In addition, learning fields 7 to 9 are based on the same competences for IT specialists and IT system electronics specialists.

IT specialists in the fields of system integration and digital networking and IT system electronics technicians also acquire the same competences in learning field 11 (b, d and SE). In the case of joint training, the requirements typical for the respective occupation should be taken into account through internal differentiation.

The learning fields 10a and 11a for IT specialists in the field of application development should be taught consecutively.

Due to their relevance to the examination, learning fields 1 to 6 of the framework curriculum are to be taught before part 1 of the final examination.

Part V Learning fields

Overview of the learning fields for the training occupations of IT specialist IT system electronics technician				
Learning fields		Time guidelines in lessons		
No.		Year 1	Year 2	Year 3
1	Describe the company and one's own role in the company	40		
2	Equip workstations according to customer requirements	80		
3	Integrating clients into networks	80		
4	Carry out a protection needs analysis in your own work area	40		
5	Customise software to manage data	80		
6	Edit service requests		40	
7	Cyber-physical systems complement		80	
8	Provide data across systems		80	
9	Provide networks and services		80	

IT specialist in the field of application development				
10a	Design and develop user interfaces			80
11a	Realise functionality in applications			80
12a	Customised development	Perform application		120
IT specialist in the field of system integration				
10b	Provide server services and automate administration tasks			80
11b	Ensure operation and security of networked systems			80
12b	Carry out customised system integration			120

IT specialist in the field of data and process analysis				
10c	Use machine learning tools			80
11c	Analyse and design processes			80
12c	Carry out customer-specific process and data analysis			120
IT specialist in the field of digital networking				
10d	Develop cyber-physical systems			80
11d	Ensure operation and security of networked systems			80
12d	Optimise customised cyber-physical system			120
Totals: 880 hours in total		320	280	280

IT system electronics technician				
10 (SE)	Provide energy supply and ensure operational safety			80
11 (SE)	Ensure operation and security of networked systems			80
12 (SE)	Plan and carry out maintenance			120
Totals: 880 hours in total		320	280	280

Learning Area 1: Describe the company and one's own role in the company**1st year of training
Time reference value: 40
hours**

The students have the competence to present their company in terms of its value chain and to describe their own role in the company.

The pupils **inform** themselves about the economic, ecological and social objectives of the company, also on the basis of the company's mission statement.

They **analyse** the market structure in their sector and classify the company as a complex system with its market and customer relations. They describe the value chain and their own role in the company.

They explore the main services and special features of their company and familiarise themselves with the organisational structure (*organisational structure*) and legal form. They inform themselves about their own scope for action and decision-making in the company (*powers of attorney*) as well as about further education and training measures.

They plan and **create**, also in a team, multimedia presentations about their company that are appropriate for the target group.

The pupils **present** their results.

They critically **review** the quality of their action product and jointly develop possibilities for improvement.

They **reflect on** their own role and actions in the company.

Learning field 2:Workplaces according to customer requirements equip

**1st year of training
Time reference value: 80 hours**

The students have the competence to dimension, offer and procure the equipment of a workplace according to the customer's requirements and to hand over the workplace to the customers.

The pupils receive the customer's request for the equipment of a workplace from internal and external customers and **determine** the resulting requirements for software and hardware. They derive selection criteria for procurement from the documented requirements. They take into account compliance with standards and regulations (*certificates, labelling*) for the operation and safety of electrical devices and components.

They **compare** the technical features of relevant products on the basis of data sheets and product descriptions to prepare a selection decision (*utility value analysis*). In doing so, they pay particular attention to information technology and energy technology parameters as well as aspects of ergonomics and sustainability (*environmental protection, recycling*). They apply research methods and also evaluate foreign language sources.

They determine the energy efficiency of different workplace variants and document them.

They compare possible sources of supply (*quantitative and qualitative comparison of offers*) and **determine** the supplier.

On the basis of the selected products and suppliers, they **prepare** a quotation for the customers with predefined mark-up rates.

They conclude the purchase contract and organise the procurement process, taking delivery times into account. You receive the ordered components and document any defects found.

They prepare the handover of the procured products, integrate IT components, configure them and put them into operation, taking into account occupational safety. You hand over the workstation to the customer and create a handover protocol.

They **evaluate** the execution of the customer order and **reflect on** their approach. In doing so, they take customer satisfaction into account and formulate suggestions for improvement.

Learning Area 3:**Integrating clients into
networks 1st
year of training Time
guideline: 80 hours**

The pupils have the competence to analyse a network infrastructure and to integrate clients.

The pupils **record** the requirements for the integration of clients (*software and hardware*) into an existing network infrastructure in a customer discussion and derive performance criteria.

They **inform** themselves about structures and components of the network and record their properties and standards. To do this, they use technical documents, also in foreign languages. They use physical and logical network plans and observe company security requirements.

They **plan** the integration into the existing network infrastructure by creating a concept that meets the requirements, also from an ecological and economic point of view (*energy efficiency*).

You **carry out** the selection of components on the basis of the performance criteria. You configure clients and integrate them into the network.

They systematically **check** the function of the configured clients in the network and record the result.

They **reflect on** the work process with regard to possible optimisations and discuss the result in terms of economic efficiency and ecology.

Learning Area 4: Protection needs analysis in own work

1st year of training
Time reference value: 40 hours

Carry out work in the field

The students have the competence to carry out a protection needs analysis with the help of an existing security guideline to determine the information security at basic protection level in their work area.

The pupils **inform** themselves about information security (*protection goals*) and legal regulations as well as compliance with company requirements to determine the level of protection for their own work area.

They **plan** a protection needs analysis by determining the protection goals of basic protection (*confidentiality, integrity, availability*) in their area of work in accordance with the company's IT security guideline and carry out a classification of damage scenarios.

They **decide** on the weighting of possible threats, taking into account the damage scenarios.

To do this, they **carry out** a protection needs analysis in their work area, record threat factors and document them.

The pupils **evaluate** the results of the protection needs analysis and compare them with the company's IT security guideline. They recommend measures and implement them in their own area of responsibility.

They **reflect on** the workflow and take responsibility in the IT security process.

Learning Area 5:	Customise software to manage data	1st year of training Time reference value: 80 hours
Pupils have the competence to map information using data, to manage this data and to adapt software for this purpose.		
The pupils inform themselves within a project about the mapping of information by means of data. They analyse data with regard to origin, type, availability, data protection, data security and storage requirements and consider data formats and storage solutions.		
They plan the adaptation of an application for the administration of data stocks and develop test cases. In doing so, they decide on a procedure.		
The pupils implement the adaptation of the application, also in a team, and create software documentation.		
They test the function of the application and assess its suitability to cope with the requirements set.		
They evaluate the software development process.		

Learning Area 6:	Edit service requests	2nd year of training Time reference value: 40 hours
<p>The pupils have the competence to classify service requests, to determine the causes of errors and to remedy them.</p>		
<p>The pupils receive service requests (<i>direct and indirect customer contact</i>). They analyse service requests and check their contractual basis (<i>service level agreement</i>). They determine the response time and document the status of the requests in the underlying service management system.</p>		
<p>Through systematic questioning, students classify service requests considering the level of support and professional standards.</p>		
<p>They determine possible solutions within the framework of the support level. On this basis, they work on the problem and document the processing status. They communicate with the process participants in a situation-appropriate manner, also in a foreign language, and adapt to the different communication requirements (<i>communication models, description strategies</i>).</p>		
<p>They reflect on the process of handling service requests and their behaviour in discussion situations. The pupils discuss the service cases and propose measures to improve quality.</p>		

**Learning Area 7:
physical systems****Complement cyber-
2nd year of training
Time reference value: 80 hours**

Students have the competence to functionally combine the physical world and IT systems into a cyber-physical system.

The students **analyse** a cyber-physical system with regard to a customer order for the addition and commissioning of further components.

They **inform** themselves about the data flow at the interface between the physical world and the IT system as well as about the communication in an existing network. They gain an overview of the energy, material and information flows of all devices and equipment involved in the system.

The pupils **plan** the implementation of the customer's request by setting up criteria for the selection of energy supply, hardware and software (*libraries, pro- tocol*). For this purpose, they use documents of technical communication and adapt them.

They **bring** components **together** functionally with the cyber-physical system.

They systematically **check** the function, measure physical operating values, validate the energy requirement and record the results.

The pupils **reflect on** the work process with regard to possible optimisations and discuss the result in terms of operational safety and data security.

Learning Area 8:

**Providing data across
systems
2nd year of training
Time reference value: 80 hours**

The pupils have the competence to combine data from decentralised sources, to process them and to make them available for further use.

The pupils identify data sources for a customer order and **analyse** them **with** regard to their structure, legal framework, access possibilities and mechanisms.

You **select** the data sources (*heterogeneous*) for the customer order.

They **develop** concepts for the provision of the selected data sources for further processing, taking into account information security.

The pupils **implement** their concept in a division of labour, also independent of location, with existing and suitable development tools and products.

They **hand over** their end product to the customer with handling documentation, also in foreign languages.

They **reflect on** the suitability of the development tools used with regard to the development process involved and the quality of the documentation.

Learning Area 9:**Providing networks
and services 2nd year of training
Time reference value: 80 hours****Pupils have the competence to plan, configure and extend networks and services.**

The pupils determine the requirements for a network in communication with the customers. They **inform** themselves about properties, functions and performance characteristics of the network components and services according to customer requirements, also taking into account security-relevant features. In doing so, they apply research methods and also evaluate foreign language sources.

They **plan** the necessary services and networks as well as their infra-structure, taking into account internal and external resources.

To do this, they **compare** concepts in terms of their sustainability and technical and economic suitability.

You **install** and configure networks and their infrastructure and implement services. You ensure compliance with standards, carry out functional tests and measurements and prepare documentation.

The pupils **assess** the networks as well as their infrastructure and the services with regard to the requirements set, data security and data protection.

They **reflect on** their solution with regard to customer satisfaction, future viability and approach.

IT specialist in the field of application development

Learning Area 10a: Designing user interfaces and develop	3rd year of training	Time allowed: 80 hours
<p>Students have the competence to design and develop user interfaces for software-based workflows and business processes.</p> <p>The pupils inform themselves about the existing operational procedures and business processes.</p> <p>They present these as models and derive optimisation options.</p> <p>They design and develop user interfaces for different end devices and operating systems using agile methods and ensure the complete mapping of the information flow, taking into account the process description.</p> <p>The pupils produce the functionality of the software solution and use already existing libraries and modules for this purpose.</p> <p>They check the product for data protection compliance and user-friendliness.</p> <p>The students test the functional correctness. They quantify the reduction of the process costs of the digitised, optimised business process and compare these with the development costs.</p>		

Learning Area 11a: Realise functionality in applications size	3rd year of training Time reference value: 80 hours
<p>The pupils have the competence to develop modular components for the information-technical processing of workflows and business processes and to ensure their quality.</p> <p>The pupils derive the necessary data structures and functionalities from the information objects of the given process descriptions of the customers.</p> <p>They plan modular software components and describe how they work with diagrams and models.</p> <p>They select a method for software development. In doing so, they ensure that planning, implementation and testing are carried out iteratively in coordination with the customer.</p> <p>The pupils realise the software components, also in a team, and connect them to data sources. They document the interfaces.</p> <p>They test the required functionality by formulating test cases and applying automated test procedures.</p> <p>The pupils assess the functionality against defined criteria of the customers and initiate measures to revise the created modules.</p>	

Learning Area 12a: Carry out customer-specific application development

**3rd year of training
Time reference value: 120
hours**

Pupils have the competence to fully carry out and evaluate an application development client assignment.

The students **carry out** a requirements analysis in cooperation with the customers and derive project goals, requirements, desired results, training needs and framework conditions from this.

On this basis, they **plan** and calculate a project with the associated human and technical resources.

The pupils develop solution variants, compare them on the basis of established criteria and taking data protection and data security into account. They **select** the best solution together with the customer. For the agreed order, they create a document about the services to be provided and an offer.

The pupils **implement** the desired solution. In doing so, they use quality assurance measures. They present the project result to the customers and conduct training. They hand over the product and the documentation to the customers.

Pupils also **evaluate** the project outcome in terms of goal achievement, cost-effectiveness, scalability and reliability.

They **reflect on** the project implementation and the project result, also taking into account critical and constructive customer feedback.

IT specialist in the field of system integration

Learning Area 10b: Provide server services and admini Automate administration tasks	3rd year of training Time reference value: 80 hours
<p>Students have the competence to provide, administer and monitor server services.</p> <p>The pupils inform themselves about server services as well as platforms.</p> <p>They select these according to the customer's requirements. In doing so, they also consider availability, scalability, administrability, cost-effectiveness and security.</p> <p>They plan the configuration of the selected services and create concepts for setting up, updating, data backup and monitoring.</p> <p>They implement the services, taking into account operational requirements and licensing. They apply test procedures, monitor the services and recommend measures to the customers in case of critical conditions. They document their results.</p> <p>You automate administration processes depending on customer-specific framework conditions, test and optimise the automation.</p> <p>Pupils reflect on their solution and assess it in terms of customer requirements.</p>	

Learning outcome 11b: Ensure operation and safety of networked systems**3rd year of training
Time reference value: 80
hours**

The pupils have the competence to determine the protection needs of a networked system with the help of a risk analysis and to plan, implement and document protective measures.

The pupils prepare for a customer interview to identify a need for protection. For this purpose, they inform themselves about information security in networked systems.

They determine the protection goals in discussions with customers, **analyse** the systems with regard to information security requirements and identify risks.

The pupils **plan the** precautions and measures to minimise the probability of damage occurring, taking into account company IT security guidelines and legal regulations.

They **implement** the measures taking into account technical and organisational framework conditions.

They **check** the safety of the networked system and **evaluate** the safety level achieved in relation to the customer requirements, measures used and cost-effectiveness. They prepare documentation and inform the customers about the results of the risk analysis.

The pupils **reflect on** the work process with regard to possible optimisations and discuss the result in relation to the concept of relative safety of the networked system.

Learning Area 12b: Carry out customer-specific system integration

**3rd year of training
Time reference value: 120
hours**

The students have the competence to fully carry out and evaluate a customer order for system integration.

The students **carry out** a requirements analysis in cooperation with the customers and derive project goals, requirements, desired results, training needs and framework conditions from this.

On this basis, they **plan** and calculate a project with the associated human and technical resources.

The pupils develop solution variants, compare them on the basis of defined criteria and taking data protection and data security into account. They **select** the best solution together with the customer. For the agreed order, they create a document about the services to be provided and an offer.

The pupils **implement** the desired solution. In doing so, they use quality assurance measures. They present the project result to the customers and conduct training. They hand over the product and the documentation to the customers.

Pupils also **evaluate** the project outcome in terms of goal achievement, cost-effectiveness, scalability and reliability.

They **reflect on** the project implementation and the project result, also taking into account critical and constructive customer feedback.

IT specialist in the field of data and process ana- lysis

Learning Area 10c:	Use machine learning tools	3rd year of training Time reference value: 80 hours
The students have the competence to apply machine learning for problem solving and to accompany the learning progress of the decision system.		
The students present possible applications of machine learning. On this basis, they decide on the suitability of machine learning in terms of customer-specific problems.		
They bring together the required data. To do this, they analyse free and commercial data sources and select them according to their suitability for solving the task using machine learning. The pupils consider data protection, moral and economic aspects.		
They define adequate tools and systems for the machine learning task.		
You prepare the selected system technically and implement the interfaces for data import.		
Pupils monitor the technical functioning with regard to the learning progress of the system.		
They reflect on the effectiveness of the learned decision-making system. They also discuss data protection, moral and economic aspects.		

Learning Area 11c: Analyse and design processes**3rd year of training
Time reference value: 80
hours**

The students have the competence to develop digital business models through process and data analysis.

The pupils derive the information flow needed to digitise the process from a customer-specific process representation. In doing so, they **analyse** already existing process data with a given evaluation procedure.

They **plan** possible technical solutions for digitising the process and **select** the project is also a business case for one of the implementation **options**.

The pupils **implement** the chosen solution for the digitised process and document it, also in foreign languages, for the customers.

They accompany the customers during the process transformation, **evaluate** the result together with them and adapt the process representation.

They **reflect on the** process design with regard to economic and ecological aspects.

**Learning Area 12c:
and da-**

Customer-specific process

**3rd year of training
Time reference value: 120
hours**

Carry out an analysis

Students have the competence to fully carry out and evaluate a customer assignment for process and data analysis.

The students **carry out** a requirements analysis in cooperation with the customers and derive project goals, requirements, desired results, training needs and framework conditions from this.

On this basis, they **plan** and calculate a project with the associated human and technical resources.

The pupils develop solution variants, compare them on the basis of established criteria and taking data protection and data security into account. They **select** the best solution together with the customer. For the agreed order, they create a document about the services to be provided and an offer.

The pupils **implement** the desired solution. In doing so, they use quality assurance measures. They present the project result to the customers and conduct training. They hand over the product and the documentation to the customers.

Pupils also **evaluate** the project outcome in terms of goal achievement, cost-effectiveness, scalability and reliability.

They **reflect on** the project implementation and the project result, also taking into account critical and constructive customer feedback.

IT specialist in the field of digital networking

**Learning Area 10d:
physical systems**

**Develop cyber-
3rd year of training
Time reference value: 80 hours**

The students have the competence to develop cyber-physical systems, to integrate sensors and actuators and to implement software and interfaces.

The pupils **analyse** a customer order for the development of a cyber-physical system.

They inform themselves about interaction possibilities between humans, machines and artificial intelligence. They **select** an implementation variant for the realisation of the customer order.

The pupils **plan** the cyber-physical system. They coordinate components, networking, programming and interactions. They also check the use of internal and external networks and services.

They **network** the components, programme and configure interfaces for data transmission and visualisation. The pupils realise the interaction between humans, machines and artificial intelligence in the cyber-physical system. They develop and apply test concepts to check and guarantee the function of the entire system.

They **prepare** technical documentation, including multimedia, on the operation and maintenance of the system and hand it over to the customers.

In communication with the customers, they also **evaluate** the cyber-physical system in terms of economic efficiency, scalability and reliability.

The pupils **reflect on** the interaction between humans, machines and artificial intelligence and also discuss ethical and moral aspects of the use of artificial intelligence.

**Learning outcome 11d: Ensure operation and safety
of networked systems**

**3rd year of training
Time reference value: 80
hours**

The pupils have the competence to determine the protection needs of a networked system with the help of a risk analysis and to plan, implement and document protective measures.

The pupils prepare for a customer interview to identify a need for protection. For this purpose, they inform themselves about information security in networked systems.

They determine the protection goals in the customer meeting, **analyse** the systems with regard to the information security requirements and name risks.

The pupils **plan the** precautions and measures to minimise the probability of damage occurring, taking into account company IT security guidelines and legal regulations.

They **implement** the measures taking into account technical and organisational framework conditions.

They **check** the safety of the networked system and **evaluate** the safety level achieved in relation to the customer requirements, measures used and cost-effectiveness. They prepare documentation and inform the customers about the results of the risk analysis.

The pupils **reflect on** the work process with regard to possible optimisations and discuss the result in relation to the concept of relative safety of the networked system.

**Learning Area 12d: Optimise customer-specific
cyber-physical system**

**3rd year of training
Time reference value: 120
hours**

The students have the competence to fully carry out and evaluate a customer order to optimise a cyber-physical system.

The students **conduct** a requirements analysis in cooperation with the clients and derive project goals, requirements, desired outcomes, training needs and framework conditions.

On this basis, they **plan** and calculate a project with the associated human and technical resources.

The pupils develop solution variants, compare them on the basis of defined criteria and taking data protection and data security into account. They **select** the best solution together with the customer. For the agreed order, they create a document about the services to be provided and an offer.

The pupils **implement** the desired solution. In doing so, they use quality assurance measures. They present the project result to the customers and conduct training. They hand over the product and the documentation to the customers.

Pupils also **evaluate** the project outcome in terms of goal achievement, cost-effectiveness, scalability and reliability.

They **reflect on** the project implementation and the project result, also taking into account critical and constructive customer feedback.

IT Systems Electronics Technician

Learning Area 10: (SE)	Provide energy supply and ensure operational safety	3rd year of training Time reference value: 80 hours
<p>The students have the competence to plan, realise and document a secure and redundant power supply of an IT system, taking into account operational safety, typical network systems and necessary protective measures.</p>		
<p>They analyse the customers' requirements, also taking scalability into account, and compare them with the existing energy supply system, also on the basis of the technical documentation.</p>		
<p>The pupils plan the procedures for the electrical commissioning of the IT system. They dimension the electrical system and take electromagnetic compatibility into account.</p>		
<p>They determine the procedure for order fulfilment, material planning and coordination with other parties involved. You select the work equipment and coordinate the work process with the customer.</p>		
<p>During installation, the pupils observe the safety rules, taking into account the accident prevention regulations when working in and on electrical installations. They pay attention to possible dangers of the electric current and apply protective measures.</p>		
<p>The pupils take measures to secure the energy supply in the event of a short-term failure of the regular power supply (<i>uninterruptible power supply, emergency power supply</i>).</p>		
<p>They prepare technical documentation and instruct customers in the use of the energy supply system.</p>		
<p>They reflect with the customers on the operational safety achieved and advise them on additional preventive measures.</p>		

Learning Area 11: (SE)	Ensure operation and security of networked systems	3rd year of training Time reference value: 80 hours
<p>The pupils have the competence to determine the protection needs of a networked system with the help of a risk analysis and to plan, implement and document protective measures.</p>		
<p>The pupils prepare for a customer interview to identify a need for protection. For this purpose, they inform themselves about information security in networked systems.</p>		
<p>They determine the protection goals in the customer meeting, analyse the systems with regard to the information security requirements and name risks.</p>		
<p>The pupils plan the precautions and measures to minimise the probability of damage occurring, taking into account company IT security guidelines and legal regulations.</p>		
<p>They implement the measures taking into account technical and organisational framework conditions.</p>		
<p>They check the safety of the networked system and evaluate the safety level achieved in relation to the customer requirements, measures used and cost-effectiveness. They prepare documentation and inform the customers about the results of the risk analysis.</p>		
<p>The pupils reflect on the work process with regard to possible optimisations and discuss the result in relation to the concept of relative safety of the networked system.</p>		

Learning Area 12: (SE)	Plan and carry out maintenance	3rd year of training Time reference value: 120 hours
The pupils have the competence to plan and carry out maintenance for networked IT systems and to implement measures to ensure operational safety.		
The students carry out a requirements analysis in cooperation with the customers and derive project goals, requirements, desired results, training needs and framework conditions from this.		
On this basis, they plan and calculate a project with the associated human and technical resources.		
The pupils develop solution variants, compare them on the basis of established criteria and taking data protection and data security into account. They select the best solution together with the customer. For the agreed order, they create a document about the services to be provided and an offer.		
The pupils implement the desired solution. In doing so, they use quality assurance measures. They present the project result to the customers and conduct training. They hand over the product and the documentation to the customers.		
The pupils also evaluate the project result in terms of target achievement, economic efficiency, scalability and operational safety.		
They reflect on the project implementation and the project result, also taking into account critical and constructive customer feedback.		

Part VI Reading notes

<p>continuous FN2nu mber</p>	<p>The core competence of the superordinate professional action is described in a way that is appropriate to the level.</p>	<p>Indication of the training year; time reference value</p>
<p>Learning Area 2: Workplaces according to Kun-</p>		<p>The first sentence contains a generalised description of the core components, competence (see designation of the learning field) at the end of the learning process of the learning field.</p>
<p>Equip the wish</p>		<p>1st year of training Time reference value: 80 hours</p>
<p>Pupils have the competence to evaluate the education and training of the pupils. The company is responsible for dimensioning, offering and procuring the equipment of a workplace according to the customer's wishes and for handing over the workplace to the customer.</p>		<p>Open formulations allow for the inclusion of organisational and technological changes</p>
<p>The students receive the customer's request for the equipment of a workplace from internal and external customers and determine the resulting requirements for software and hardware. They derive selection criteria for procurement from the documented requirements. They take into account compliance with standards and regulations (<i>certificates, labelling</i>) for the operation and safety of electrical devices and components.</p>		<p>Data protection and data security are taken into account</p>
<p>They compare the technical features of relevant products on the basis of data sheets and product descriptions to prepare a selection decision (<i>utility value analysis</i>). In doing so, they pay particular attention to information technology and energy technology parameters as well as aspects of ergonomics and sustainability (<i>environmental protection, recycling</i>). They apply research methods and also evaluate foreign language sources.</p>		<p>Sustainability in learning and working processes is taken into account.</p>
<p>They determine the energy efficiency of different workplace variants and document them.</p>		<p>Foreign language is taken into account</p>
<p>They compare possible sources of supply (<i>quantitative and qualitative comparison of offers</i>) and determine the supplier.</p>		<p>Binding minimum contents are marked in italics.</p>
<p>Based on the selected products and suppliers, they prepare a quotation for the customers with specified overhead rates.</p>		<p>take into account situations of occupational language action</p>
<p>They conclude the purchase contract and organise the procurement process, taking delivery times into account. You take receipt of the ordered components and document any defects found.</p>		<p>Open formulations allow for different methodological approaches, taking into account the material equipment of the schools.</p>
<p>They prepare the handover of the procured products, integrate IT components, configure them and put them into operation, taking into account occupational safety. You hand over the workstation to the customer and create a handover protocol.</p>		<p>Complexity and interactions of actions are taken into account</p>
<p>They evaluate the execution of the customer order and reflect on their approach. In doing so, they take customer satisfaction into account and formulate suggestions for improvement.</p>		<p>Professional, personal and social competence; methodological, learning and communicative competence are taken into account.</p>

Professional, personal and social competence; methodological, learning and communicative competence are taken into account.

Overall text provides guidance on designing holistic learning situations across the phases of action

Lists of correspondences
between
the framework curriculum for the vocational school
and the training framework plans for the company

in the occupations of IT specialist and IT
specialist and
IT system electronics technician

The lists of correspondences document the coordination of learning content between the learning venues vocational school and training company.

It is characteristic of dual vocational education and training that trainees acquire their competences at the two learning venues of vocational school and training company. There are different legal regulations for this:

- The curriculum at the vocational school is based on the framework curriculum of the Standing Conference of the Ministers of Education and Cultural Affairs.
- The in-company training is based on the training framework plan, which is part of the training regulations.

Both plans were drawn up by expert teachers and trainers in constant consultation with each other in a procedure developed jointly by the Federal Government and the Conference of Ministers of Education and Cultural Affairs for the coordination of training regulations and framework curricula in the area of vocational education and training ("Joint Results Protocol").

In the following lists of correspondences, the learning fields of the framework curriculum are assigned to the positions of the training framework plans in such a way that the temporal and factual coordination becomes clear. It can thus be an aid to improving and intensifying cooperation between the learning venues on site.

BIBB
KMK

List of correspondences between the training framework plan and the framework curriculum

of vocational training

to become an IT
specialist

Section A: cross-disciplinary occupational profile skills, knowledge and abilities

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
1.	Plan, prepare and carry out work tasks in accordance with customer-specific business and performance processes. (§ 4 paragraph 2 Number 1)	a) Apply the principles and methods of project management.	12		X		X	5, 12a-d
		b) Check the order documents and the feasibility of the order, in particular with regard to legal, economic and time requirements, and coordinate the order with the operational processes and possibilities.			X		X	2, 12a-d
		c) Set timetable and sequence of work steps for own work area			X		X	3, 12a-d
		d) Plan and coordinate appointments and monitor deadlines.					X	12a-d
		e) analyse problems and define them as tasks as well as develop and evaluate alternative solutions.			X			2
		f) use working and organisational resources economically and ecologically, taking into account the available resources and the budgetary requirements			X			2

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		g) plan and coordinate tasks within the team and with internal and external customers			X			2, 3
		h) collect and evaluate data relevant to business management, taking into account business and performance processes,			X			2, 3
		i) reflect on one's own approach as well as the execution of tasks in the team and contribute to the improvement of work processes			X	X	X	1 - 11 a-d
2.	Informing and advising clients and customers (§ 4 paragraph 2 Number 2)	a) compare prices, services and conditions of competitors within the scope of market observation			X			1, 2
		b) Identify the needs of customers and distinguish between target groups.			X			1, 2
		c) inform customers and present facts in compliance with communication rules, using German and English technical terms.	3		X			1, 2
		d) support measures for branding and distribution						operational
		e) evaluate sources of information, also in English, in relation to the task and use them to inform the client.			X			1, 2
		f) conduct conversations in a manner appropriate to the situation and advise customers, taking into account their interests		2	X	X	X	3, 9, 12a-d

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		g) manage customer relations in compliance with legal regulations and business principles				X	X	6, 9, 12a-d
		h) Interpret data and facts, prepare them in multimedia form and present them in a way that is appropriate to the situation using digital tools and taking account of operational requirements.				X	X	6, 9, 12a-d
3.	Evaluate current IT systems on the market and customer-specific solutions (§ 4 paragraph 2 Number 3)	a) evaluate IT systems available on the market for different fields of application with regard to performance, economic efficiency and freedom from barriers	10		X			2, 3
		b) obtain and evaluate offers for IT components, IT products and IT services and compare specifications and conditions			X			2, 3
		c) identify technological development trends of IT systems and their economic, social and professional impact	5		X	X		2, 3, 9
		d) Identify changes in the use of IT systems due to technical, economic and social developments.			X	X		2, 3, 9
4.	Developing, creating and maintaining IT solutions (§ 4 paragraph 2) Number 4)	a) analyse IT systems for the processing of operational tasks and design, configure, test and document them, taking into account licensing models, copyrights and accessibility.	5		X	X		3, 7, 9

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		b) distinguish between programming languages, in particular procedural and object-oriented programming languages			X			5
		c) Systematically identify, analyse and rectify faults.				X		6
		d) formulate algorithms and create applications in a programming language		7	X	X	X	5, 8, 10a-12a, 10c-12c
		e) distinguish database models, organise and store data and create queries.			X	X	X	5, 8, 10a-12a, 10c-12c
5.	Carrying out and documenting quality-improving measures (§ 4 paragraph 2 Number 5)	a) apply operational quality assurance systems in their own field of work and implement and document quality assurance measures in the course of projects	4		X	X	X	3, 5, 6, 8, 11a, 12a-d
		b) systematically determine, eliminate and document the causes of quality defects			X	X	X	3, 5, 6, 11a, 12a-d
		c) control the achievement of objectives within the framework of an improvement process, in particular carry out a target-performance comparison.		8	X	X		1, 2, 6, 8
6.	Implement, implement and check measures for IT security and data protection. (§ 4 paragraph 2 Number 6)	a) comply with operational requirements and legal regulations on IT security and data protection			X	X	X	4, 8, 9, 11b, 11d
		b) Analyse security requirements of IT systems and derive, coordinate, implement and evaluate measures for IT security.	6		X	X	X	4, 8, 9, 11b, 11d

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019					
Apprenticeship training position			Training average per month		School year			Learning field(s)	
			1 - 18	19 - 36	1	2	3		
		c) Know threat scenarios and assess damage potentials taking into account economic and technical criteria.				X	X	X	4, 8, 9, 11b, 11d
		d) advise customers with regard to requirements for IT security and data protection		6		X	X	X	4, 8, 9, 11b, 11d
		e) Check the effectiveness and efficiency of the implemented measures for IT security and data protection.				X	X	X	4, 8, 9, 11b, 11d
7.	Performance of the services and conclusion of the contract (§ 4 paragraph 2 Number 7)	a) document services according to operational and contractual requirements				X	X		2, 6
		b) Coordinate and control the provision of services with customers, taking into account the organisational and scheduling requirements.					X	X	6, 7, 8, 9, 11b, 11d, 12a-d
		c) Accompany and support change processes				X	X	X	2, 3, 7, 9, 11a, 11c
		d) instructing customers in the use of products and services		7		X		X	2, 12a-d
		e) hand over services and documentation to customers and prepare acceptance protocols.				X	X	X	2, 6, 12a-d
		f) Record costs for services rendered and evaluate them in a time comparison and in a target-performance comparison.				X		X	2, 12a-d
8.	Operation of IT Systems (§ 4 paragraph 2 Number 8)	a) Distinguish network concepts for different fields of application	3			X	X		3, 9

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		b) Realise data exchange of networked systems				X		8
		c) Analyse availability and failure probabilities and propose solutions.				X	X	9, 11b, 11d
		d) initiate and implement measures for preventive maintenance and fault avoidance				X		6, 7
		e) record and analyse fault messages and take measures to rectify the fault					X	6
		f) prepare, provide and maintain documentation, especially technical, system and user documentation, in a target-group-appropriate and non-discriminatory manner.		3		X	X	4, 5, 8
9.	Commissioning of storage solutions (§ 4 paragraph 2 Number 9)	a) Define and implement security mechanisms, in particular access possibilities and rights.		5	X	X	X	4, 9, 11b, 11d
		b) Integrate storage solutions, especially database systems.			X	X		5, 8
10.	Programming software solutions (§ 4 paragraph 2 Number 10)	a) Define programme specifications, derive data models and structures from technical requirements and define interfaces.	5		X		X	5, 10a-12a, 10c-12c, 10d-12d
		b) select programming languages and use different programming languages			X		X	5, 10a-12a, 10c-12c, 10d, 12d
		c) Automate subtasks of IT systems		10	X		X	5, 10b

Section B: Occupational profile skills, knowledge and abilities in the field of application development

Draft training framework Status: 28.02.2020					Draft framework curriculum Stand: 13.12.2019			
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
1.	Design and implementation of customised software applications (§ 4 paragraph 3 Number 1)	a) Select and use process models and methods as well as development environments and libraries.	15		X	X	X	5, 7,10a-12a
		b) apply analysis and design procedures				X		7, 8
		c) design user interfaces ergonomically and adapt them to customer requirements				X	X	7, 10a
		d) design and implement application solutions taking into account the existing system architecture	25		X	X	X	5, 8, 11a
		e) Adapt existing application solutions			X		X	5, 11a
		f) realise data exchange between systems and use different data sources				X		8
		g) Carry out complex queries from different data sources and create data stock reports.				X	X	8, 12a
2.	Ensuring the quality of software applications (§ 4 paragraph 3 Number 2)	a) Consider security aspects in the development of software applications.	5			X	X	8, 11a, 12a
		b) Ensure data integrity with the help of tools			X	X	X	5, 8, 12a
		c) Create and conduct module tests			X	X	X	5, 8, 10a, 11a
		d) Use version management tools		7	X	X	X	5, 8, 10a-12a

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		e) Create test concepts and carry out tests as well as evaluate and document test results.			X		X	5, 10a, 11a
		f) prepare data and facts from tests in a multimedia format and present them in a situationally appropriate manner using digital tools and taking into account the company's requirements.			X		X	5, 10a, 11a

Section C: Occupational profile skills, knowledge and abilities in the field of system integration

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
1.	Conception and realisation of IT Systems (§ 4 paragraph 4 Number 1)	a) Design system solutions according to the customer-specific requirements, taking into account safety aspects.	8				X	10b
		b) select, install and configure IT systems			X	X		2, 9
		c) Evaluate, select and integrate external IT resources into an IT system.				X		9
		d) assess and solve compatibility problems of IT systems and system components	12		X	X		3, 7
		e) create test concepts and carry out and document tests			X	X		5, 7

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		f) Plan the system handover and coordinate and implement it with the organisational units and customers involved.				X		2, 12b
		g) Plan and carry out data transfers				X		8
2.	Install and configure networks (§ 4 paragraph 4 Number 2)	a) network protocols and -Evaluate and select interfaces for different application areas.	5				X	10b
		b) Select, install and configure network components			X	X	3, 10b	
		c) implement and document systems for IT security in networks		6			X	11b
3.	Administration of IT systems (§ 4 paragraph 4 Number 3)	a) Create and implement guidelines for the use of IT systems	7				X	10b, 11b
		b) manage licensing rights and monitor compliance with licensing requirements					X	10b, 11b
		c) Design, coordinate and implement authorisation concepts					X	10b, 11b
		d) Evaluate and perform system updates					X	10b, 11b
		e) develop and implement concepts for data security and archiving					X	10b, 11b
		f) Create and implement concepts for data and system recovery		14			X	10b, 11b
		g) Monitor system utilisation and manage resources						

Draft training framework Status: 28.02.2020					Draft framework curriculum Stand: 13.12.2019			
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		h) monitor, evaluate and take measures for system behaviour					X	10b, 11b
		i) receive, analyse and process user requests					X	10b, 11b

Section D: Occupational profile-defining skills, knowledge and abilities in the field of data and process analysis

Draft training framework Status: 28.02.2020					Draft framework curriculum Stand: 13.12.2019			
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
1.	Analysing work and business processes (§ 4 paragraph 5 Number 1)	a) analyse business and production processes and their interaction in the company	8		X		X	1, 11c, 12c
		b) Map requirements in a process representation.					X	11c, 12c
		c) compare and propose tools for process optimisation					X	11c, 12c
2.	Analysing data sources and providing data (§ 4 paragraph 5 Number 2)	a) Identify and classify data from heterogeneous data sources.	5		X	X	X	5, 8, 10c
		b) Checking the authorisation to use and link data and deriving appropriate measures			X	X		4, 9
		c) ensure technical requirements for the transfer of data and provide data		5			X	X

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019					
Apprenticeship training position			Training average per month		School year			Learning field(s)	
			1 - 18	19 - 36	1	2	3		
3.	Use of data to optimise work and business processes and to optimise digital business models (§ 4 (5)). Number 3)	a) Check data for quality, in particular plausibility, quantity, redundancy, completeness and validity, document results and, in the event of deviations from the target status, propose measures, in particular to improve data quality.	6			X	X	X	5, 8, 10c-12c
		b) Ensure discoverability, accessibility, interoperability, reusability of data.				X	X	8, 12c	
		c) apply analytical and statistical methods	21					X	11c
		d) Use programming languages with integrated evaluation procedures and visualisation tools.						X	10c-12c
		e) prepare the results of the analysis for different target groups				X	X	8, 11c, 12c	
		f) Apply mathematical predictive models							
		g) use tools for pattern recognition and model generation						X	10c
		h) Use the results of analyses to optimise business and production processes.						X	11c
		i) derive key figures and propose them for a monitoring system						X	X
4.	Implementing data protection and the protection goals	(a) cooperate with persons and institutions responsible for data protection	1		X			5	

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
Data security (§ 4 paragraph 5 Number 4)	b) Create user access, data storage and data security concepts, taking into account the different data classifications.		6		X	X		4, 9
	c) pay attention to data economy and data care when handling data and creating the concepts.				X			4
	d) select and use procedures for data encryption					X		8

Section E: Occupational profile skills, knowledge and abilities in the field of digital networking

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
1.	Analysing and planning systems for the networking of processes and products (§ 4 paragraph 6) Number 1)	a) understand and visualise the interaction of the components of cyber-physical systems	12				X	10d
		b) Analyse existing networking, software used and technical interfaces, in particular taking into account the existing network topology.					X	10d
		c) Consider aspects of IT security and technical framework conditions, in particular network requirements, during planning					X	11d
		d) Select network components, prepare technical documentation and calculate costs					X	11d

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		e) agree on the solution for networking and changes to the system with the customer in mind.					X	11d
		f) Evaluate data and develop proposals for optimising the interaction of systems.		4			X	11d
2.	Setting up, modifying and testing networked systems (§ 4 paragraph 6 Number 2)	a) install, customise and configure system components and network operating systems	4			X		9
		b) apply software solutions for the visualisation and optimisation of process flows				X		9
		c) create and adapt programmes and configure signal and data transmission equipment	13				X	10d
		d) Consider security and data systems, identify potential hazards and determine access authorisations.					X	11d
		e) Create test concepts, carry out tests, eliminate errors and document results and changes.					X	11d
		f) Commission systems, create commissioning protocols and hand over systems.					X	11d
3.	Operating networked systems and ensuring system availability (§ 4 paragraph 6 Number 3)	a) Monitor system utilisation and document system status.	4				X	11d
		b) Record system data and evaluate it with regard to input parameters and determine and rectify system faults.					X	11d

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		c) Evaluate data to optimise maintenance intervals and process flows.		15			X	11d
		d) Evaluate system, diagnostic and process data, identify weak points and derive measures.					X	11d
		e) distinguish and counteract attack scenarios in cyber-physical systems					X	11d
		(f) detect anomalies in networked systems and implement protective measures					X	11d
		g) implement area-specific security solutions					X	11d
		h) carry out system updates and propose optimisations					X	11d, 12d

Section F: interdisciplinary skills, knowledge and abilities to be taught integratively

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019			
Apprenticeship training position			Time allocation	School year			Learning field(s)
				1	2	3	
1	2	3	4	5			6
1.	Vocational training as well as labour and collective bargaining law (§ 4 paragraph 7 Number 1)	a) present the essential contents and components of the training contract, identify rights and obligations arising from the training contract and describe the tasks of the participants in the dual system	During the entire training to	X	X	X	WISO

Draft training framework Status: 28.02.2020			Draft framework curriculum Stand: 13.12.2019						
Apprenticeship training position			Time allocation		School year		Learning field(s)		
					1	2	3		
		<p>b) compare the in-company training plan with the training regulations</p> <p>c) observe labour, social and codetermination regulations as well as collective bargaining and working time regulations applicable to the field of work</p> <p>d) Explain the positions of their own payroll accounting.</p> <p>e) justify opportunities and requirements of lifelong learning for professional and personal development and further develop own competences</p> <p>f) apply learning and working techniques as well as methods of self-directed learning and use professionally relevant sources of information.</p> <p>g) present career advancement and development opportunities.</p>	communicate						
2.	Structure and organisation of the training company (§ 4 paragraph 7) Number 2)	<p>a) explain the legal form and the organisational structure of the training enterprise with its tasks and responsibilities as well as the interrelationships between the business processes.</p> <p>b) name the relations of the training company and its employees to business organisations, professional associations and trade unions.</p>			X	X	X	1 and WISO	

Draft training framework Status: 28.02.2020			Draft framework curriculum Stand: 13.12.2019					
Apprenticeship training position			Time allocation		School year		Learning field(s)	
					1	2	3	
		c) describe the basic principles, tasks and working methods of the legal bodies of the training company that are responsible for the works constitution or staff representation.						
3.	Safety and health at work (§ 4 paragraph 7 Number 3)	(a) identify hazards to safety and health at work and take measures to avoid them			X	X	X	all LF
		b) apply occupational health and safety and accident prevention regulations			X	X	X	all LF
		c) describe behaviour in case of accidents and initiate first measures						operational
		d) apply fire prevention regulations, describe fire behaviour and take fire-fighting measures.						operational
4.	Environmental protection (§ 4 paragraph 7 Number 4)	Contribute to the avoidance of operationally induced environmental pollution in the area of occupational impact, in particular						
		a) explain the possible environmental impacts of the training company and its contribution to environmental protection using examples.			X	X	X	all LF (Job-related preliminary remarks)
		(b) apply environmental protection regulations applicable to the training enterprise						
		c) make use of possibilities to use energy and materials in an economic and environmentally friendly way						

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Time allocation		School year			Learning field(s)
					1	2	3	
		d) Avoid waste and dispose of substances and materials in an environmentally friendly manner.						
5.	Networked cooperation using digital media (§ 4 paragraph 7 Number 5)	a) practise mutual appreciation, taking into account social diversity in business processes	3		X	X	X	all LF (Job-related preliminary remarks)
		b) apply strategies for responsible use of digital media and cooperate in the virtual space while respecting the personal rights of third parties.						
		c) take into account the effects of their own communication and information behaviour, in particular when storing, displaying and passing on digital content.						
		d) reflect on ethical aspects when assessing, developing, implementing and supporting IT solutions.						

BIBB
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List of correspondences between the training framework plan and the framework curriculum

of vocational training

IT system electronics
technician (m/f)

Section A: cross-disciplinary occupational profile skills, knowledge and abilities

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019					
Apprenticeship training position			Training average per month		School year			Learning field(s)	
			1 - 18	19 - 36	1	2	3		
1.	Plan, prepare and carry out work tasks in accordance with customer-specific business and performance processes. (§ 4 paragraph 2 Number 1)	a) Apply the principles and methods of project management.	12			X		X	5, 12(SE)
		b) Check the order documents and the feasibility of the order, in particular with regard to legal, economic and time requirements, and coordinate the order with the operational processes and possibilities.				X	X	X	2, 9, 12(SE)
		c) Determine time schedule and sequence of work steps for own work area				X		X	3, 11-12(SE)
		d) plan and coordinate appointments and monitor deadlines						X	11-12(SE)
		e) analyse problems and define them as tasks as well as develop and evaluate alternative solutions.				X	X		2, 4, 7, 9
		f) use working and organisational resources economically and ecologically, taking into account the available resources and the budgetary constraints				X	X	X	2, 3, 4, 9, 12(SE)

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		g) Plan and coordinate tasks in the team and with internal and external customers.			X		X	2, 3, 11(SE)
		(h) collect and evaluate data relevant to business management, taking into account business and performance processes			X			2, 3
		i) reflect on one's own approach as well as the execution of tasks in the team and contribute to the improvement of work processes			X	X	X	1-9, 10-12(SE)
2.	Informing and advising clients and customers (§ 4 paragraph 2 Number 2)	a) compare prices, services and conditions of competitors within the scope of market observation	3		X			1, 2
		b) Identify the needs of customers and distinguish between target groups.			X			1, 2
		c) inform customers in compliance with communication rules and present facts and use German and English technical terms.			X			1, 2
		d) support measures for branding and distribution			X			3
		e) evaluate sources of information, also in English, in relation to the task and use them to inform the client.			X			1, 2
		f) conduct conversations in a manner appropriate to the situation and advise customers, taking into account their interests				2	X	X

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		g) manage customer relations in compliance with legal regulations and business principles				X	X	6, 9, 12(SE)
		h) interpret data and facts, prepare them in multimedia form and present them in a manner appropriate to the situation using digital tools and taking into account the company's requirements.				X	X	6, 9, 12(SE)
3.	Evaluate current IT systems on the market and customer-specific solutions (§ 4 paragraph 2 Number 3)	a) evaluate IT systems available on the market for different fields of application with regard to performance, economic efficiency and freedom from barriers	10		X			2, 3
		b) obtain and evaluate offers for IT components, IT products and IT services and compare specifications and conditions			X			2, 3
		c) identify technological development trends of IT systems and their economic, social and professional impact	5		X			2, 3, 7
		d) Identify changes in the use of IT systems due to technical, economic and social developments.			X			2, 3, 7, 9
4.	Developing, creating and maintaining IT solutions (§ 4 paragraph 2) Number 4)	a) analyse IT systems for the processing of operational tasks and conceptualise, configure, test and document them, in particular with regard to licensing models and copyright law and accessibility	5		X	X		3, 7, 9

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		b) distinguish between programming languages, in particular procedural and object-oriented programming languages			X	X		5, 8
		c) Systematically identify, analyse and rectify faults.		7		X	X	6, 12(SE)
		d) formulate algorithms and create applications in a programming language			X			5
		e) distinguish database models, organise and store data and create queries.			X	X		5, 8
5.	Carrying out and documenting quality-improving measures (§ 4 paragraph 2 Number 5)	a) apply operational quality assurance systems in their own field of work and implement and document quality assurance measures in the course of projects	4			X	X	X
		b) systematically determine, eliminate and document the causes of quality defects		8	X	X	X	3, 5, 6, 12(SE)
		c) control the achievement of objectives within the framework of an improvement process, in particular carry out a target-performance comparison.			X	X	X	2, 6, 7, 12(SE)
6.	Implement, implement and check measures for IT security and data protection. (§ 4 paragraph 2 Number 6)	a) comply with operational requirements and legal regulations on IT security and data protection	6		X	X	X	4, 8, 9, 11(SE)
		b) Analyse security requirements of IT systems and derive, coordinate, implement and evaluate measures for IT security.			X	X	X	4, 8, 9, 11(SE)

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019					
Apprenticeship training position			Training average per month		School year			Learning field(s)	
			1 - 18	19 - 36	1	2	3		
		c) Know threat scenarios and assess damage potentials taking into account economic and technical criteria.			X	X	X	4, 7, 8, 9, 11(SE)	
		d) advise customers with regard to requirements for IT security and data protection		6	X	X	X	4, 8, 9, 11(SE)	
		e) Check the effectiveness and efficiency of the implemented measures for IT security and data protection.			X	X	X	4, 8, 9, 11(SE)	
7.	Performance of the services and conclusion of the contract (§ 4 paragraph 2 Number 7)	a) document services according to operational and contractual requirements			X	X	X	2, 6, 10-11(SE)	
		b) Coordinate and control the provision of services with customers, taking into account the organisational and scheduling requirements.				X	X	6, 7, 8, 9, 12(SE)	
		c) Accompany and support change processes			X	X		2, 3, 7, 9	
		d) instructing customers in the use of products and services		7		X	X	2, 10-11(SE)	
		e) hand over services and documentation to customers and prepare acceptance protocols.				X	X	X	2, 6, 12(SE)
		f) Record costs for services rendered and evaluate them in a time comparison and in a target-performance comparison.					X		9
8.	Installing and configuring IT devices and IT systems	a) select IT devices and components for IT systems	8		X	X	X	3, 7, 9, 10-12(SE)	

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
	(§ 4 paragraph 2 Number 8)	b) assemble and install IT devices and IT systems in accordance with the applicable regulations, standards and operational specifications, in particular by using planning documents			X	X	X	2, 7, 9, 10-12(SE)
		c) assemble cables and connect IT devices and components			X	X	X	2, 7, 9, 10(SE)
		d) configure, adapt and commission IT devices and IT systems and test and document the functions of interfaces and transmission paths				X	X	7, 9, 10-12(SE)
		e) Integrate IT equipment and components into existing networks and infrastructures according to specifications, in particular according to the planning documents, the applicable regulations, standards and operational requirements, and prepare documentation.		8		X	X	7, 9, 10(SE)
		(f) set up, install, test and commission IT security equipment.				X	X	7, 9, 11(SE)
9.	Installing network infra- structures and transmission systems (§ 4 paragraph 2 Number 9)	a) Distinguish and select network components	2		X	X	X	3, 7, 9, 11(SE)
		b) Install and commission network components according to specifications			X	X	X	3, 9, 11(SE)
		c) distinguish and select network infrastructures and transmission systems		14	X	X		3, 7, 9

Draft training framework Status: 28.02.2020					Draft framework curriculum Stand: 13.12.2019			
Apprenticeship training position			Training average per month		School year			Learning field(s)
					1	2	3	
1 - 18			19 - 36					
		(d) set up, install, commission and test network infrastructures in accordance with the applicable regulations, standards and operational requirements, in particular with the aid of planning documents			X	X	X	3, 7, 9, 11(SE)
		e) Integrate network infrastructure into existing IT systems and put it into operation			X	X	X	3, 7, 9, 11(SE)
		f) assemble, install, commission and test transmission systems in accordance with the applicable regulations, standards and operational specifications, in particular by using planning documents				X		7, 9
		g) Install, configure and commission network and transmission components.				X		7, 9
		h) implement hardware and software systems for IT security in networks				X	X	7, 9, 10-12(SE)
10.	Planning and preparing service and maintenance measures on IT equipment and IT systems and their infra- structure (§ 4 paragraph 2 Number 10)	a) Check and evaluate performance characteristics				X	X	6, 7, 9, 12(SE)
		b) Plan services and maintenance measures, estimate the respective expenditure and document the planning.				X	X	6, 7, 9, 11-12(SE)
		(c) assist in the preparation of maintenance contracts				X		6, 7, 9
		d) Receive fault reports, isolate faults and submit proposals for fault rectification.			5		X	X

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Apprenticeship training position			Training average per month		School year			Learning field(s)	
			1 - 18	19 - 36	1	2	3		
		e) select and use suitable test and diagnostic procedures.				X		6, 7, 9	
		f) Implement measures for the elimination of disturbances and prepare documentation.				X	X	6, 7, 9, 11(SE)	
11.	Carrying out service and maintenance work on IT devices and IT systems and their infrastructure (§ 4 paragraph 2 Number 11)	a) Checking the functionality of IT equipment and IT systems	3			X		6, 9	
		b) carry out preventive maintenance					X		11-12(SE)
		c) carry out services and maintenance measures in accordance with the applicable regulations, standards and operational requirements		8			X	11-12(SE)	
		d) Use test and diagnostic procedures and evaluate the results.						11-12(SE)	
		e) Check the functionality of IT equipment and IT systems and individual components.				X	X	7, 9, 12(SE)	
		f) Isolate causes of malfunctions						X	12(SE)
		(g) rectify faults in IT equipment and IT systems and individual components, in particular replace and set up hardware components and install and configure software						X	12(SE)
		h) detect and rectify faults in network infrastructures						X	11-12(SE)
		i) document services rendered and make them available for invoicing						X	11-12(SE)
12.	Order completion and support for users and	(a) participate in the planning and preparation of product training courses	2				X	12(SE)	

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Apprenticeship training position			Training average per month		School year			Learning field(s)	
			1 - 18	19 - 36	1	2	3		
	Users in the use of IT equipment and systems and their infrastructure (§ 4 Paragraph 2) number 12)	b) instructing users in the operation of IT equipment and IT systems					X	10(SE), 12(SE)	
		c) participate in the implementation of product trainings		3			X	12(SE)	
		d) Instruct users in the measures for IT security.				X	10-11(SE)		
		e) Carry out handover to clients			X	X	X	2, 8, 12(SE)	
		f) Document order completion				X	10-12(SE)		
13.	IT security and data protection in IT systems, network infrastructures and transmission systems (§ 4 paragraph 2) number 13)	a) Implement safety concepts according to specifications			5		X	X	9,10-11(SE)
		b) Assess potential hazards				X	X	9, 10-11(SE)	
		c) estimate safety incidents				X	X	9, 10-11(SE)	
		d) Initiate processes in the handling of safety incidents.					X	10-11(SE)	
		e) select and use security mechanisms, especially access options and rights					X	10-12(SE)	
14.	Installing IT systems, devices and operating equipment and connecting them to the power supply system (§ 4 paragraph 2 Number 14)	a) take and implement measures to protect against electrical hazards		13		X	X	X	2, 7, 10-11(SE)
		b) Determine the energy demand taking into account the performance factors for IT systems, equipment and resources.				X	X	X	2, 7, 10(SE)
		c) define circuits and select distribution equipment and lines, complying with the recognised rules of technology					X	X	7.10(SE)

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Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		d) Select IT systems, devices and equipment taking into account the operating and environmental conditions.			X	X	X	2, 7, 10(SE)
		e) create and apply documentation, in particular installation and circuit diagrams				X	X	7, 10-11(SE)
		f) connect IT systems, devices and equipment in accordance with the rules of technology and in compliance with manufacturer's specifications			X	X	X	2, 7, 10(SE)
		(g) isolate faults in IT systems, equipment and resources, rectify them by replacing faulty components and arrange for repair measures to be taken					X	10-11(SE)
		h) carry out and record measurements on electrical devices in accordance with the recognised rules of technology, in particular determine and assess protective conductor and insulation resistance as well as protective conductor and touch current					X	10-11(SE)
		i) hand over IT systems, devices and equipment, including professional documentation, and explain them in a way that is appropriate for the addressee		1		X	X	7, 10(SE)
15.	Testing the electrical safety of devices and equipment (§ 4 paragraph 2 number 15)	a) Carry out visual inspections of devices and equipment, in particular detect and assess damage and compliance with safety requirements.		6			X	10-11(SE)

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Training average per month		School year			Learning field(s)
			1 - 18	19 - 36	1	2	3	
		b) Determine and assess measures for protection against electrical hazards.					X	10-11(SE)
		c) select and use testing and measuring methods in accordance with the recognised rules of technology					X	7, 10-11(SE)
		d) assess and document tests and measurements				X	X	7, 10-11(SE)
		e) Identify and initiate measures to eliminate deficiencies.					X	10e, 11e

Section F: Skills, knowledge and abilities to be taught integratively

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019			
Apprenticeship training position			Time allocation	School year			Learning field(s)
				1	2	3	
1.	Vocational training as well as labour and collective bargaining law (§ 4 paragraph 3 Number 1)	a) present the essential contents and components of the training contract, identify rights and obligations arising from the training contract and describe the tasks of the participants in the dual system	during the entire training to teach the				WISO
		b) compare the in-company training plan with the training regulations		X	X	X	
		c) comply with labour, social and co-determination regulations as well as with collective and labour applicable collective bargaining and labour regulations					
		d) explained the positions of their own payrolls.					

Draft training framework Status: 28.02.2020			Draft framework curriculum Stand: 13.12.2019					
Apprenticeship training position			Time allocation		School year		Learning field(s)	
					1	2	3	
		<p>e) justify the opportunities and requirements of lifelong learning for professional and personal development and further develop one's own competences</p> <p>f) apply learning and working techniques as well as methods of self-directed learning and use professionally relevant sources of information.</p> <p>g) present career advancement and development opportunities.</p>						
2.	Structure and organisation of the training company (§ 4 paragraph 3) Number 2)	<p>a) explain the legal form and the organisational structure of the training enterprise with its tasks and responsibilities as well as the interrelationships between the business processes.</p> <p>(b) identify the relations of the training enterprise and its employees with business organisations, professional organisations and trade unions</p> <p>c) describe the basics, tasks and working methods of the organs of the training enterprise under company constitution law</p>			X	X	X	1 and WISO
3.	Safety and health at work (§ 4 paragraph 3 Number 3)	<p>(a) identify hazards to safety and health at work and take measures to avoid them</p> <p>b) apply occupational health and safety and accident prevention regulations</p>			X	X	X	all LF
					X	X	X	all LF

Draft training framework Status: 28.02.2020				Draft framework curriculum Stand: 13.12.2019				
Apprenticeship training position			Time allocation		School year			Learning field(s)
					1	2	3	
		c) describe behaviour in case of accidents and initiate first measures						operational
		d) apply regulations of preventive fire protection, describe fire behaviour and take measures to fight fires						operational
4.	Environmental protection (§ 4 paragraph 3 Number 4)	Contribute to the avoidance of operationally induced environmental pollution in the area of occupational impact, in particular						all LF (occupation-related preliminary remarks)
		a) explain possible environmental impacts caused by the training company and its contribution to environmental protection using examples.						
		b) apply environmental protection regulations applicable to the training enterprise			X	X	X	
		c) make use of the possibilities of economical and environmentally friendly energy and material use						
		d) Avoid waste and dispose of substances and materials in an environmentally friendly manner.						
5.	Networked cooperation using digital media (§ 4 paragraph 3 Number 5)	a) practise mutual appreciation, taking into account social diversity, in operational processes	3					all LF (occupation-related preliminary remarks)
		b) apply strategies for the responsible use of digital media, cooperate in the virtual space, taking into account the personal rights of third parties						

Draft training framework Status: 28.02.2020			Draft framework curriculum Stand: 13.12.2019					
Apprenticeship training position			Time allocation		School year			Learning field(s)
					1	2	3	
		c) Take into account the effects of one's own communication and information behaviour, especially when storing, displaying and sharing digital content.						
		d) Reflect on ethical aspects when assessing, developing, implementing and supporting IT solutions.						