General information

title of the training provider/programme;
duration of the training;
EQF level;
name of the person responsible for issuing the CPC;
personal data of the person in training;
the date the CPC was issued.

Organisational Profile

The field shaded in yellow (including also the orange part) indicates the competence profile of the training programme: It indicates the relevant competence areas and steps of competence development for the training programme and the corresponding credit points.

Individual Profile

The field shaded in orange indicates the competence profile of the person in training: It indicates the stage of competence development that the person in training has reached so far and the corresponding credit points.

Credit Points

Credit Points are used as quantitative measurements of parts of a training programme or qualification and are based on the 'student workload' required to achieve the objectives of a programme (specified in competences to be acquired); within one year of typical training (formal full-time VET programme or 'main tracks' of training) a maximum of 60 credit points can be achieved. For the competence profiles only those credit points that are fully relevant to the vocational profile are calculated.

Competence Profile Certificate (CPC)

Training Provider:
Training Programme:
Duration of the training:
EQF level:
Responsible person for issuing the CPC:
Person in training:
Date:

Competence Areas (core work tasks)	Steps of competence development Credit Points				Credit Points Org. Profile	Credit Points Individ. Profile
1. Preparing, planning, mounting and installing …	5	5	10		20	10
2. Inspecting, maintaining and servicing…	5	5	5		15	10
3. Setting up, putting into operation…	10	10			20	10
4. Designing, modifying and adapting…	5	5	10	10	30	10
5. Developing custom designed…	10	10	15		35	20
6. Supervising and supporting work…	5	10	10		25	15
7. Installing, configuring, modifying…	10	15	25		50	25
8. Diagnosing and repairing…	5	10	10		25	15
Credit points for the vocational profile					220	115
Additional competences:					20	5
Total credit points					240	120
Further remarks:						

Additional information

Many training programmes include not only vocational competences, but also other kinds of competences that are not directly relevant to the vocational profile. If necessary, data on additional competences (or subject areas) that are completed within the framework of the training programme, but which are not part of the vocational profile can be added as well as the corresponding credit points. These credit points can then be calculated into the final total.

Further remarks

If necessary, further remarks regarding differences between the descriptions in the Organisational Profile and the curriculum or training plan can be included (for example, in some cases only parts of the descriptions of a step of competence development might be relevant for the training programme). Further comments to the Individual Profile can also be included (for example, if competence development is not yet complete for a certain area or step, and the respective credit points have not yet been awarded for this step, it is necessary to note which competences are still missing or have still to be acquired).

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VQTS model

The VQTS model was developed in the Leonardo da Vinci project VQTS and further elaborated in the Lifelong Learning project VQTS II (Vocational Qualification Transfer System II).

The VQTS project has developed an ECVET approach (European Credit System for Vocational Education and Training) that involves a system of a structured description of work-related competences and their acquisition (including Credit Points). The VQTS model provides a 'common language' to describe vocational competences and also offers a way to relate these competence descriptions to the competences acquired in training programmes. It enhances transparency of vocational competences and therefore facilitates international comparison of qualifications.

The VQTS model can be used for those purposes where the transparency of competence profiles is very important, such as:

- transferring vocational competences acquired abroad (mobility in VET);
- transferring and recognising competences acquired within the formal VET system as well as competences achieved through non-formal or informal learning;
- developing qualifications;
- composing job profiles as well as personnel (human resources) planning;
- referencing qualifications to qualifications frameworks;
- enhancing permeability between VET and HE (focus of the VQTS II project) .

The core elements are the Competence Matrix and Competence Profiles:

- A Competence Matrix displays competences structurally in a table according to core work tasks in a specific occupational field and the progress of competence development.
- Competence Profiles (including Credit Points) are formed from individual parts of this Competence Matrix. The 'Organisational Profile' identifies competences relevant for a certain training programme or qualification. The 'Individual Profile' notes the competences acquired by a person in training. Based on the competence profile of the person in training a Competence Profile Certificate can be issued.

Pilot Competence Matrices are available for the fields of 'mechatronics' and 'electronics/electrical engineering'; illustrative examples also arise from these particular fields. However, the VQTS model can also be used for describing and comparing competences in other fields.

Example – Competence Matrix 'electronics/electrical engineering'

The left column of the table contains competence areas, based on the various core work tasks. The acquisition of competences by a person in training with reference to core work tasks is described for each competence area as steps of competence development (horizontal axis).

In the first VQTS project (Competence Matrix 'mechatronics'), the focus was on the skilled worker level and on VET programmes from secondary level education. The VQTS II project intended to develop a Competence Matrix useful for identifying overlapping areas between VET and higher education programmes and therefore the scope of the Competence Matrix 'electronics/electrical engineering' had to be broadened to include at least some steps of competence development relevant for higher education.

Example: Steps of competence development for the competence area 'Setting up, putting into operation and adjusting electrical and/or electronic systems':

- He/She can set up, adjust and put into operation electrical and/or electronic systems (e.g., allocating frequency channels for a TV set, basic settings of a frequency converter or a thermo relay for a motor) following customer requirements and instructions from the technical documentation.
- He/She can obtain and set system test parameters for setting up and operating electrical and/or electronic systems and select and carry out test procedures for installation and adjustment (e.g., adjusting interfaces in multimedia system, sensitivity setting of alarm equipment, elevator control unit).
- He/She can select, set up and adjust electrical and/or electronic systems and their control including accompanying sensors and actuators according to requirement analysis (e.g., energy supply systems, drive systems, electrical machinery, radio relay systems).

Competence Matrix „Electronics/Electrical Engineering"

Competence areas (core work tasks)	Steps of competence development				
1. Preparing, planning, mounting and installing electrical and/or electronic systems for buildings and industrial applications	He/She can prepare and carry out simple electrical and/or electronic installations (e.g., cables, electrical outlets, connection and distribution systems, modular electronic components, computer components) as well as carry out and check the necessary wirings and mountings.	He/She can plan, prepare and connect electrical and modular electronic installations (e.g., energy supply in private and business premises, incl. lighting; alternating and three-phase current; electronic systems as units, wireless LAN, multimedia systems). He/She can advice the costumer and select the best implementation according to customer specifications.	He/She can plan complex electrical and/or electronically networked installations (e.g., systems of energy distribution, building management systems / KNX, regulation and monitoring systems, building access systems, RFID-systems) and fully wire them. He/She can configure, service and diagnose the functionality of the installation according to customer requirements and for this purpose can use computer-assisted tools.		
2. Inspecting, maintaining and servicing electrical and/or electronic systems and machinery	He/She can carry out basic and scheduled maintenance tasks, inspections and checks at electrical and/or electronic equipment according to maintenance schedules and predefined instructions (e.g., checking voltage tolerances, changing wearing parts in industrial plants, switching and control systems, electrical machinery, computer systems). He/She can use the measuring and testing tools necessary for it.	He/She can carry out and document preventative maintenance and alignment tasks at electrical and/or electronic industrial appliances and systems according to established quality assurance methods (e.g., continuous monitoring of a CNC machine tool)	He/She can analyse and determine availability and condition of electrical and/or electronic systems. He/She can analyse influencing factors on reliability and performance of electrical and/or electronic systems and find causes of malfunctions (e.g., leakage current analysis, power factor correction, EMC analysis).	He/She can develop and document maintenance and inspection methods for electrical/electronic systems based on production and service process analysis as well as on quality management and customer requirements. He/She is able to develop related maintenance, inspection and quality assurance plans (e.g., optimizing MTBF of a production line, planning reserve power supply).	
3. Setting up, putting into operation and adjusting electrical and/or electronic systems	He/She can set up, adjust and put into operation electrical and/or electronic systems (e.g., allocating frequency channels for a TV set, basic settings of a frequency converter or a thermo relay for a motor) following customer requirements and instructions from the technical documentation.	He/She can obtain and set system test parameters for setting up and operating electrical and/or electronic systems and select and carry out test procedures for installation and adjustment (e.g., adjusting interfaces in multimedia system, sensitivity setting of alarm equipment, elevator control unit).	He/She can select, set up and adjust electrical and/or electronic systems and their control including accompanying sensors and actuators according to requirement analysis (e.g., energy supply systems, drive systems, electrical machinery, radio relay systems).		
4. Designing, modifying and adapting wirings and circuit boards for electrical and/or electronic systems including their interfaces	He/She can modify, plan and build up simple electrical and/or electronic circuits according to standards and guidelines (e.g., wiring for rooms, connection diagram of basic motor circuits, simple operational amplifier applications, small programmable control units).	He/She can modify, plan and build up standard electrical and/or electronic appliances according to customer requirements and official regulations (e.g., fire-warning devices, layouts for electrical/electronic wirings with the help of CAD programmes, energy supply in private and business premises).	He/She can design, build up and electronic applications and its interfaces together with experts working in interdisciplinary teams according to EMC standards and confirming tests (e.g., electronic control circuits and equipment, microcontroller applications, PLC and related software).	He/She can design, build up and configure devices, facilities and units for process control systems including related programming and considering complex system requirements (e.g., controlled drive systems, process monitoring, automated production line, real time microcontroller applications for car control, GSM data transmission for monitoring and remote control).	
5. Developing custom designed electrical and/or electronic projects	He/She can develop and propose solutions for simple electrical and/or electronic systems based on customer requirements (e.g., lighting installations, power supply unit, basic automation and control systems).	He/She can design electrical and/or electronic systems (e.g., PLC program for industrial applications, microcontroller application, ensuring expansion capability and provide the necessary documentation (operational, maintenance, safety instructions, function, integration and acceptance tests).	He/She can develop technical solutions for electrical and/or electronic systems and applications (e.g., microcontroller board for heating and air condition, RFID access system, new production line) and provide appropriate documentation and customer training.		
6. Supervising and supporting work and business processes including quality management	He/She can check process steps in the production with suitable process tools (e.g., PPS, ERP, MRP) and carry out quality controls.	He/She can evaluate results of the process monitoring with software tools and determine quality assurance actions (work, production and time scheduling).	He/She can develop controlling methods in the production (e.g. PPS, MRP, ERP) and process planning/control and supervision (e.g. CAP) and implement these with the help of software supported systems.		
7. Installing, configuring modifying and testing of application software for setting up and operating electrical and/or electronic systems	He/She can install programmes for hardware and software environments and carry out simple configuration tasks as well as updates (e.g., starter software, graphical programming for measurement and automation).	He/She can select hardware and software for production systems following the business requirements and test programmes.	He /She can integrate hardware and software into existing system environments and use simulation and diagnostic programs (e.g. implement and adapt a driver for a CAD/CAM interface).	He/She can combine hardware and software to networked systems, environments and carry out network specific checks of all of software (e.g., OPC-Server, process control system).	
8. Diagnosing and repairing of electrical/electronic systems and equipment	He/She can carry out standardized test procedures and diagnostic methods using wiring diagrams and test tools and carry out simple repairs at electrical and/or electronic systems (e.g., power measurement, level measurement).	He/She can use testing and diagnostic tools as well as expert systems for the fault diagnosis at electrical and/or electronic systems up to the component level and carry out the necessary repairs (e.g., software control test, spectrum analyzer).	He/She can select and use diagnostic methods for complex electrical and/or electronic systems and carry out preventative measures for the avoidance of disturbances and malfunctions in arrangement with customers (e.g., detection of bit error rate, over-voltage protection analyse).	He/She can carry out system analyses (e.g., FMEA, FTA) of electrical and/or /electronic systems, determine error types and develop suitable diagnosis and repair methods including preventative measures.	

Acronyms

CAD:	Computer Aided Design
CAP:	Computer Aided Planning
CAM:	Computer Aided Manufacturing
CNC:	Computer Numeric Control
EMC:	Electro Magnetic Compatibility
ERP:	Enterprise Resource Planning
FMEA:	Failure Mode and Effect Analysis
FTA:	Failure Tree Analysis
GSM:	Global System for Mobile Communications
MRP:	Machine Resource Planning

MTBF:	Mean Time Between Failures
OPC:	Object Linking Embedding for Process Control
KNX:	Konnex is the most established standard for home and building electronic systems. The Konnex technology is based on the well-tried EIB-System (European Installation bus - EIB)
LAN:	Local Area Network
PLC:	Programmable Logic Control
PPS:	Production Planning System
RFID:	Radio Frequency Identification

He/She can modify, plan and build up standard electrical and/or electronic appliances according to customer requirements and official regulations (e.g., fire-warning devices, layouts for electrical/electronic wirings with the help of CAD programmes, energy supply in private and business premises).

He/She can develop controlling methods in the production (e.g. PPS, MRP, ERP) and process planning/control and supervision (e.g. CAP) and implement these with the help of software supported systems.

He/She can carry out standardized test procedures and diagnostic methods using wiring diagrams and test tools and carry out simple repairs at electrical and/or electronic systems (e.g., power measurement, level measurement).

He/She can design electrical and/or electronic systems (e.g., PLC program for industrial applications, microcontroller application, ensuring expansion capability) and provide the necessary documentation (operational, maintenance, safety instructions, function, integration and acceptance tests).