



FINNISH NATIONAL  
BOARD OF EDUCATION

Requirements for Vocational Qualifications

# **VOCATIONAL QUALIFICATION IN INFORMATION AND COMMUNICATIONS TECHNOLOGY 2010**

Study programme/Specialisation in Service Support  
Study programme/Specialisation in Software Development

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Vocational upper secondary education and training providers  
Qualification committees in the field

## REGULATION

17 February 2010      16/011/2010  
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effective 1 Aug 2010 until further notice

Acts on which the issuing of the Regulation  
is based:

Act 630/1998, Section 13 (2)  
Decree 811/1998, Section 10 (12)  
Act 631/1998 13, Section (2)

Repeals National Board of Education Regulations  
17.2.2000 no. 22/011/2000  
and for this qualification the following Regulations  
1.8.2001 no. 42/011/2001  
19.6.2002 no. 34/011/2002  
27.8.2004 no. 28/011/2004  
30.9.2005 no. 32/011/2005  
13.2.2007 no. 5/011/2007

Amends National Board of Education Regulation

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## REQUIREMENTS FOR VOCATIONAL QUALIFICATIONS

Vocational Qualification in Information and  
Communications Technology

The Finnish National Board of Education has rendered its decision regarding the qualification requirements (national core curriculum and competence-based qualification principles) of the Vocational Qualification in Information and Communications Technology in accordance with the annex.

The Regulation must be observed in all upper secondary education and training (curriculum-based education and training) and competence-based qualifications started after 1 August 2010. All education and training and competence-based qualifications that have started prior to the entry of this Regulation into force may be completed in accordance with Regulation 17.2.2000 no. 22/011/2000 by 31 July 2020, unless otherwise stipulated in other statutes and Regulations.

In curriculum-based education and training, the education provider must draw up and approve a curriculum in compliance with the terms stipulated in these qualification requirements.

In providing education and training leading to a competence-based qualification, the education provider determines the educational content and provision in accordance with the qualification requirements. An opportunity to complete a competence-based qualification must be provided to all candidates.

The education provider, qualification provider and qualification committee shall comply with the terms stipulated in this Regulation and shall not deviate in any way from it.

Director General      Timo Lankinen

Counsellor of Education      Anne Huhtala

ANNEXE

Vocational Qualification in Information and Communications Technology

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# INTRODUCTION

A vocational qualification can be completed both as a curriculum or competence-based qualification. The requirements of a vocational qualification include both the requirements of the upper secondary vocational qualification and the requirements of a competence-based qualification and therefore their terminology has been made more uniform. The requirements of a vocational qualification is a regulation and it guides the providers of both curriculum-based training as well as competence-based qualifications, and the electronic version of the qualification requirements document allows one to distinguish, when necessary, the sections that relate to vocational upper secondary education and training (curriculum-based training) and competence-based training. Chapters 1 and 4 together with the parts describing the vocational field and the value basis in Chapter 9 are common. Chapters 2, 5, 6, 7 and 8 only concern vocational qualifications completed in vocational upper secondary education and training and Chapter 3 those completed as competence-based qualifications.

The term module of a qualification compares with the term of study entity used earlier in curriculum-based training. A qualification consists of vocational study modules and in vocational upper secondary education and training also of core subjects and free choice modules. Additional modules can be included in a qualification when that is necessary in view of working life sector specific or local vocational requirements or the need for in-depth professional skills of the would-be qualification holder.

The requirements of a vocational qualification state the objectives set for the qualification and study programme or specialisation, structure of qualification, module specific skills requirements or objectives, targets of assessment and assessment criteria for core subjects as well as the ways of demonstrating vocational skills in the case of vocational study modules. These requirements also include other provisions concerning vocational upper secondary education and training as well as competence-based qualifications.

The requirements of vocational qualification modules and the objectives of core subjects have been defined as learning outcomes (knowledge, skills, competence). This forms the basis for describing the targets of assessment through mastering the work process, work method, equipment and material as well as underpinning knowledge and the key competences for lifelong learning.

An education provider approves a curriculum for upper secondary vocational education and training based on the qualification requirements. When arranging preparatory training for competence-based qualifications, the provider decides its contents and how to arrange it in compliance with the qualification requirements.

# OBJECTIVES AND STRUCTURE OF THE VOCATIONAL QUALIFICATION IN INFORMATION AND COMMUNICATIONS TECHNOLOGY, DATANOMI

## 1.1 OBJECTIVES OF THE VOCATIONAL QUALIFICATION IN INFORMATION AND COMMUNICATIONS TECHNOLOGY, DATANOMI

A person who has completed the Vocational Qualification in Information and Communications Technology possesses extensive skills for working in related tasks in various industries. He/She also possesses specialised know-how based on the study programme, specialisation or other optional module that he/she has chosen to pursue. A person who has completed this qualification is able to utilise his/her skills in diverse and changing working environments. He/She possesses the vocational skills required for working in relevant tasks either as an employee or an independent entrepreneur.

A person who has completed the Vocational Qualification in Information and Communications Technology works reliably, flexibly and creatively as required by the customers and the situations at hand. He/She observes copyrights and the legislation pertaining to the field. He/She is able to use ICT solutions to support, develop and enhance the operational processes of an organisation. He/She promotes sustainable development at work. He/She possesses good interaction and documentation skills as well as the ability to work in a team and on projects. He/She is able to communicate in different languages in an international working environment.

A person who has completed the Vocational Qualification in Information and Communications Technology is able to constantly follow the trends of the developing field and develop his/her work accordingly as well as contribute to the development of the work community. He/She possesses good IT skills and the readiness to take part in the procurement process. He/She is able to install and use ICT tools and information systems as well as manage the resources of an information network. He/She is able to represent the field in diverse information system projects.

A person who has completed the Study Programme or Specialisation in Service Support is able to install, test and document server hardware, applications and the necessary network connections that are appropriate for the working environment of a customer. He/She guides the customer through setup and simultaneously ensures that the hardware and software work appropriately. He/She standardises worksta-



tions by cloning a system image in an environment that contains multiple workstations. He/She is familiar with the English terminology of the field. A person who has completed the Study Programme or Specialisation in Service Support provides services for an information network and a server as well as configures the services to be used at the customer's workstations while observing situation-specific concerns. He/She protects and secures the data processed in an information network. He/She works in customer service tasks, resolving any problems that occur in the use of devices and services in cooperation with other experts and service providers. A person who has completed the Study Programme or Specialisation in Service Support develops and supports an ICT environment and the related services. He/She supports the databases and database environments that are essential for service provision. He/She enhances and automates his/her work as well as resolves problems that occur in the use of software and hardware by using scripts in addition to software used for auditing, testing and maintenance. He/She manages the data security and backing up of an information system.

A person who has completed the Study Programme or Specialisation in Service Support plans and documents the deployment of an ICT system or device. He/She assists and guides the customer in planning and implementing ergonomic solutions at the workplace. He/She also assists the customer in using office software, applications and information network services in addition to their advanced properties. He/She prepares the required user instructions as well as plans and provides the necessary training and guidance. He/She handles and documents the customers' service requests.

A person who has completed the Study Programme or Specialisation in Software Development works on a software project where he/she models the operations and concepts of an organisation by using suitable description techniques. He/She works on different phases of software engineering while using the appropriate methods and utilising design models. He/She prepares a specification document based on the requirements. He/She designs a database and a user interface according to the specifications while observing usability. He/She productises the software that he/she has designed by utilising existing implementation solutions. He/She prepares a testing and deployment plan. A person who has completed the Study Programme or Specialisation in Software Development conducts software engineering tasks while observing data security. He/She searches for the required information in a database by using a query language. He/She participates in testing during different stages of software engineering. He/She masters the English terminology of the field. A person who has completed the Study Programme or Specialisation in Software Development interprets the technical specifications produced during software design in order to deploy the software. He/She produces and documents software for selected

data terminal equipment by using a programming environment. He/She deploys the user interface logic and database connections for software. When programming, he/she produces easily maintained, effective and recyclable solutions.

In addition, vocational upper-secondary education and training should support the development of students, enabling them to become good and balanced individuals and members of society, and provide them with the knowledge and skills they need for further studies, their personal interests and the versatile development of their personalities. It should also provide support for lifelong learning (Finnish Act 630/98, Section 5).

## 1.2 THE STRUCTURE OF THE VOCATIONAL QUALIFICATION IN INFORMATION AND COMMUNICATIONS TECHNOLOGY

VOCATIONAL QUALIFICATION IN INFORMATION AND COMMUNICATIONS TECHNOLOGY, DATANOMI, 120 CREDITS	
IN VOCATIONAL UPPER SECONDARY EDUCATION	IN COMPETENCE-BASED QUALIFICATION
<b>4. Vocational modules, 90 credits</b>	<b>4. Vocational modules</b>
The qualification comprises a minimum of 20 credits of on-the-job learning, a minimum of 5 credits of entrepreneurship and a minimum of 2 credits of final project.	
4.1 Compulsory modules for all, 30 cr 4.1.1 Working in service assignments, 20 cr 4.1.2 Purchasing and deployment of systems, 10 cr	4.1 Compulsory modules for all 4.1.1 Working in service assignments 4.1.2 Purchasing and deployment of systems
4.2 Study Programme in Service Support, 40 cr 4.2.1 Working in service support, 20 cr 4.2.2 Implementation of and support for services, 20 cr In addition, 20 credits from modules 4.3.1–4.3.2 or 4.4.1–4.5.6 are to be selected.	4.2 Specialisation in Service Support 4.2.1 Working in service support 4.2.2 Implementation of and support for services In addition, the candidate must select either one (1) section from modules 4.3.1–4.3.2 or two (2) sections from modules 4.4.1–4.4.13.
4.3 Study Programme in Software Development, 40 cr 4.3.1 Software specification and design, 20 cr 4.3.2 Software implementation, 20 cr In addition, 20 credits from modules 4.2.1–4.2.2 or 4.4.1–4.5.6 are to be selected.	4.3 Study Programme in Software Development 4.3.1 Software specification and design 4.3.2 Software implementation In addition, the candidate must select either one (1) section from modules 4.2.1–4.2.2 or two (2) sections from modules 4.4.1–4.4.13.

<p>4.4 Optional modules for all</p> <p>4.4.1 Multimedia production, 10 cr</p> <p>4.4.2 Electronic service production, 10 cr</p> <p>4.4.3 Server software management and virtualisation, 10 cr</p> <p>4.4.4 Cross-media publishing, 10 cr</p> <p>4.4.5 Database management, 10 cr</p> <p>4.4.6 Use of an integrated development environment, 10 cr</p> <p>4.4.7 Testing, 10 cr</p> <p>4.4.8 Utilisation of information systems, 10 cr</p> <p>4.4.9 Data security management, 10 cr</p> <p>4.4.10 Standardisation of service support processes, 10 cr</p> <p>4.4.11 Modules from vocational upper secondary qualifications, 5–20 cr</p> <p>4.4.12 Module from further vocational qualifications</p> <p>4.4.13 Module from specialist vocational qualifications</p> <p>4.4.14 Module from polytechnic studies, 5–10 cr</p> <p>4.4.15 Locally offered modules, 5–10 cr</p>	<p>4.4 Optional modules for all</p> <p>4.4.1 Multimedia production</p> <p>4.4.2 Electronic service production</p> <p>4.4.3 Server software management and virtualisation</p> <p>4.4.4 Cross-media publishing</p> <p>4.4.5 Database management</p> <p>4.4.6 Use of an integrated development environment</p> <p>4.4.7 Testing</p> <p>4.4.8 Utilisation of information systems</p> <p>4.4.9 Data security management</p> <p>4.4.10 Standardisation of service support processes</p> <p>4.4.11 Modules from vocational upper secondary qualifications</p> <p>4.4.12 Module from further vocational qualifications</p> <p>4.4.13 Module from specialist vocational qualifications</p>
<p>4.5 Other optional modules in vocational upper secondary education and training</p> <p>4.5.1 Entrepreneurship, 10 cr</p> <p>4.5.2 Workplace instructor training, 2 cr</p> <p>4.5.3 In-depth and enhancing vocational modules, 5–10 cr</p> <p>4.5.4 Core subjects, 0–10 cr</p> <p>4.5.5 General upper secondary studies, 0–10 cr</p>	
<p>4.6 Modules providing individual in-depth vocational competence (modules that expand the scope of a vocational upper secondary qualification)</p> <p>4.6.1 Business operations, 10 cr</p> <p>4.6.2 Modules from vocational qualifications (vocational upper secondary qualifications, further vocational qualifications and specialist vocational qualifications)</p> <p>4.6.3 Locally offered modules providing in-depth vocational competence in curriculum-based vocational education and training, 10 cr</p>	<p>4.6 Modules providing individual in-depth vocational competence (modules that expand the scope of a vocational upper secondary qualification)</p> <p>4.6.1 Business operations</p> <p>4.6.2 Modules from vocational qualifications (vocational upper secondary qualifications, further vocational qualifications and specialist vocational qualifications)</p>

<b>IN VOCATIONAL UPPER SECONDARY EDUCATION</b>		
<b>5. Core subjects in curriculum-based vocational education and training, 20 credits</b>		
<b>5.1 Compulsory modules for all</b>	<b>Compulsory</b>	<b>Optional</b>
5.1.1 Mother tongue	4 credits	0–4 credits
5.1.2 Second national language	1 credit	0–4 credits
5.1.2.1 Second national language, Swedish	1 credit	
5.1.2.2 Second national language, Finnish	2 credits	
5.1.3 Foreign language	2 credits	0–4 credits
5.1.4 Mathematics	3 credits	0–4 credits
5.1.5 Physics and chemistry	2 credits	0–4 credits
5.1.6 Social, business and labour-market subjects	1 credit	0–4 credits
5.1.7 Physical education	1 credit	0–4 credits
5.1.8 Health education	1 credit	0–4 credits
5.1.9 Arts and culture	1 credit	0–4 credits
<b>5.2 Optional modules</b>		
5.2.1 Optional additional modules to compulsory core subjects, see Chapters 5.1.1–5.1.9 above		
5.2.2 Environmental studies		0–4 credits
5.2.3 Information and communications technology		0–4 credits
5.2.4 Ethics		0–4 credits
5.2.5 Cultural knowledge		0–4 credits
5.2.6 Psychology		0–4 credits
5.2.7 Entrepreneurship		0–4 credits
	16 credits	4 credits
<p>In education provided in Swedish, the scope of studies in the second national language is 2 credits, and the scope of the compulsory core subjects in vocational qualification is 17 credits and the scope of optional modules is 3 credits.</p> <p>The scope of compulsory studies in both physical education and health education is 1 credit. Education provider can divide the compulsory studies in physical education and health education differently, but yet in such a way that their overall scope totals two credits.</p>		
<b>6. Free-choice modules in vocational upper secondary education, 10 credits</b>		
The qualification modules comprise a minimum of 1.5 credits of student counselling		

### **Principles of a vocational qualification**

Vocational qualifications are made up of vocational modules, which are either compulsory or optional. Curriculum-based qualifications also include compulsory and optional core subjects as well as free choice modules. Furthermore, a qualification can be personalised by including more modules, which expand the qualification, when that is necessary from to meet sector specific working life requirements or local vocational needs and to enrich the candidate’s vocational skills. Qualification specific rules on optional modules are presented above in the table introducing the Vocational Qualification in Informations and Communications Technology.

Student (curriculum-based training) or candidate (competence-based qualifications) can also include modules from other vocational qualifications in the vocational upper secondary qualification.

To improve his/her eligibility to pursue further studies a student can choose general upper secondary studies, even take the matriculation examination. These studies can compensate for core subjects, other optional qualification modules and free choice studies.

To facilitate making choices and validation of prior learning, the compensation principles for studies completed or to be completed in a general upper secondary school have been described in Section 5 Core subjects. Defining the principles of compensation also promotes cooperation between education providers and the use of common training provision. Completing the whole qualification is the primary goal in education and training leading to a qualification provided in accordance with the Act on Vocational Education and Training. A student can also take a vocational qualification one or more modules at a time to give a more profession specific result when it is appropriate considering the individual's learning abilities, life situation or employability. The student must have flexible opportunities to complete the qualification at a later date. In these kinds of situations the education provider draws up a plan, preferably in cooperation with the employer, for completing the qualification.

### **1.3 KEY COMPETENCES FOR LIFELONG LEARNING**

These key competences for lifelong learning are taken to mean such competence as is needed in continuous learning, in seizing future and new situations as well as in coping with the changing working life environment. They are an important part of vocational skills and reflect an individual's intellectual flexibility and ability to manage different situations. They increase the vocational civilisation and civic readiness needed in all fields and help the students or candidates to keep up with the changes in society and working life as well as to act under changing conditions. They also play a major part in one's quality of life and development of personality.

In addition to common emphases of the previous core curriculum of vocational upper secondary education, the Requirements of competence-based qualifications and key competences common to all vocational fields, the key competences for lifelong learning are considered to include cross-curricular themes from basic and general upper secondary education together with the recommendations for the key competences for lifelong learning 2005/0221 (COD) made by the European Union Parliament and the Commission.

The key competences for lifelong learning are included in the objectives of the requirements of vocational qualification modules and their assessment criteria. The key competences for lifelong learning to be assessed separately consist of the following: learning and problem solving, interaction and cooperation, vocational ethics and health, safety and ability to function.

Key competences for lifelong learning are

1. Learning and problem solving
2. Interaction and cooperation
3. Vocational ethics
4. Health, safety and ability to function
5. Initiative and entrepreneurship
6. Sustainable development
7. Aesthetics
8. Communication and media skills
9. Mathematics and natural sciences
10. Technology and information technology
11. Active citizenship and different cultures

## **Description of the key competences for lifelong learning**

### **Learning and problem solving**

The student or candidate plans his/her activities and develops himself/herself and the work. He/she assesses his/her own competence, solves problems and makes decisions and choices in his/her work. Student/candidate is adaptive, innovative and creative in his/her line of work, acquires information and analyses, assesses and applies it.

### **Interaction and cooperation**

The student or candidate acts appropriately in different interactive situations and also expresses different views clearly, constructively and in a way that creates confidence. He/she works cooperatively with different people and as a member of a team and also treats all people equally. He/she observes common rules of behaviour and regulations. He/she makes use of the feedback given.

**Vocational ethics**

The student or candidate observes the value basis of the profession. He/she is committed to his/her work and acts responsibly following the contracts made and work ethics.

**Health, safety and ability to function**

The student or candidate acts safely and responsibly at work and leisure as well as in traffic and also leads a healthy life and maintains his/her ability to function and work. He/she works ergonomically and takes physical exercise needed in the profession and also acts in a manner that prevents the dangers and health hazards in the working environment.

**Initiative and entrepreneurship**

The student or candidate works towards completing the objectives set. He/she takes initiative and acts in a customer-oriented way as an employer and/or entrepreneur. He/she plans activities and works to reach the objectives set. He/she acts economically and is result-orientated. He/she sets personal goals in line with the overall objectives.

**Sustainable development**

The student or candidate acts according to the ecological, economical, social and cultural principles sustainable development in the profession. He/She observes the rules, regulations and contracts of sustainable development prevailing in the sector.

**Aesthetics**

The student or candidate takes into consideration the aesthetic factors in his/her line of work. He/she contributes to and maintains the niceness and aesthetics of the working environment.

**Communications and media skills**

The student or candidate uses his/her language skills in a way that is appropriate, varied and interactive considering the situation. Student/candidate observes, interprets and assesses different media products critically. He/she uses the media and information technology as well as produces media material.

### **Mathematics and natural sciences**

The student or candidate uses basic mathematics to solve mathematic equations at work and in everyday life. He/she uses for example formulas, graphs, patterns and statistics to help solve work related assignments and problems. Student/candidate applies methods and practices that are based on the laws of physics and chemistry at work.

### **Technology and information technology**

The student or candidate makes versatile use of technologies used in his/her profession. He/she considers the technological benefits, limitations and risks. He/she makes versatile use of computer technology as a professional and a citizen.

### **Active citizenship and different cultures**

The student or candidate participates constructively in the activities and decision making of the community. He/she acts according to his/her rights and responsibilities both at work and in everyday life. He observes the acts on equality. He/she acts appropriately and considering the requirements of working life with people from different cultural backgrounds both at home and in international operations.

## **1.4 ELIGIBILITY FOR FURTHER STUDIES**

According to Paragraph 4 of the Vocational Education and Training Act, vocational upper secondary studies grant the student eligibility to further his/her studies in universities or universities of applied sciences.



# IMPLEMENTATION OF NATIONAL REQUIREMENTS IN CURRICULUM-BASED VOCATIONAL EDUCATION AND TRAINING

## 2.1 DESIGN AND CONTENTS OF THE CURRICULUM

According to the Vocational Education and Training Act (630/1998, section 14) the education provider must endorse for its training a curriculum that is based on the qualification requirements mentioned in this document. It must contain the procedures that ensure that the education reaches the tasks and objectives (Act 630/1998, section 5). A curriculum must be approved separately for education provided in Finnish, Swedish and Saami and also for education in any other language when necessary. The curriculum of an education provider is a public document. The curriculum regulates and directs the education offered by the provider and all other activities closely related to it. To give the student protection under the law, the curriculum must provide adequate information about the modules and studies included in the qualification, assessment and arrangements concerning completion of the studies. The curriculum must be compiled so that it enables the students to individually select vocational studies as well as to complete general upper secondary studies and the matriculation examination. The curriculum also acts as a basis for internal and external evaluation and also allows evaluating the effectiveness of the education offered by the education provider.

The education provider reserves the recourses needed for the education. The education provider also sees that the curriculum allows the student to achieve the objectives set for the qualification, to receive enough teaching and counselling he/she needs regardless of the way the education is organized on each workday, also during on-the-job learning and skills demonstrations.

The curriculum consists of the common part for all the fields of vocational education and training and qualification specific part of the curriculum.

## 2.1.1 Common part of the curriculum

The common principles and procedures for all the upper secondary qualifications and core values of the education provider are defined in the common part of the curriculum.

The common part of the curriculum consists of at least

- ◆ providing education and training as curriculum-based vocational education and training, as training arranged at a workplace in connection with practical work assignments and as apprenticeship training (Act 630/1998, sections 3, 15 and 17)
- ◆ arranging education and training as contact teaching, distance, multi-modal (Act 630/1998, sections 15) and e-learning
- ◆ plans and methods for completing a module or modules as well as students' opportunities to add on to their studies and complete the whole qualification
- ◆ providing education in cooperation with other education providers and working life (Act 630/1998, sections 14 and 10)
- ◆ teaching related measures promoting community spirit, which provides an opportunity for reflecting values and getting to know our cultural heritage (Decree 811/1998, sections 9)
- ◆ common practices on performing student assessment (Act 601/2005, section 25a) in accordance with Chapter 7
- ◆ compliance with the regulations of Chapter 8
- ◆ staff development plan.

The education provider must include plans on how to promote equality, non-discrimination and sustainable development in the curriculum. When organising the education the education provider must also take into account the obligations in other statutes concerning education and training.

## 2.1.2 Qualification specific part of the curriculum

The qualification specific part of the curriculum determines the organisation of the vocational qualification modules and the core subjects, in cooperation with other education providers and working life. It also determines the timing of the education, learning environments and teaching methods, with the help of which the student can achieve the vocational skills requirements and objectives of the qualification.

The qualification specific part also lists the studies the training provider offers from other qualifications as well as the student's opportunities to complete more than one qualification. It includes the decision on the assessment plan for the vocational modules and core subjects, which is to include skills demonstrations and other assessment of competence.

Qualification specific part of the curriculum is to cover at least

- ◆ structure of the qualification of compulsory and optional vocational modules and core subjects
- ◆ progression, timing and sequence of studies
- ◆ provision of free choice modules
- ◆ a plan on the provision of individual in-depth vocational modules (modules enhancing a vocational upper secondary qualification)
- ◆ a plan on assessment of the modules and methods used for assessment of competence
- ◆ a plan on assessing vocational modules in a way that it includes a plan on implementation and assessment of skills demonstrations approved by the local board for vocational skills demonstrations
- ◆ locally offered modules, their skills requirements, targets of assessment and criteria as well as the objectives, targets of assessment and assessment criteria for the additional optional modules of compulsory core subjects.

### **2.1.3 Individual study plan**

Vocational Education and Training Act (Act 630/1998, section 14) contains the provision of a student's right to make individual choices in his/her studies. Vocational Education and Training Decree (Decree 811/1998, sections 3, 4 and 12a) contains the provision of how to inform students of the training offered, of student counselling and recognition and validation of prior skills. In order that a student's right to make individual choices is possible, the education provider must prepare the student an indivi

## COMPLETING A VOCATIONAL QUALIFICATION AS A COMPETENCE-BASED QUALIFICATION

### 3.1 GENERAL ON COMPETENCE-BASED QUALIFICATION SYSTEM

The competence-based qualification system offers adults a flexible way of demonstrating, renewing and maintaining their vocational competence, or when duties change, qualifying for a new profession. In a competence-based qualification a person's vocational competence can be nationally and quality-wise acknowledged despite whether the skills have been acquired through working experience, studies or other activities. In the competence-based qualification system the employer side, employee side and the training sector work in close cooperation when developing the qualification structure, drawing up qualification requirements, planning and arranging competence tests as well as when assessing test performances.

Vocational qualifications, further and specialist vocational qualifications can be completed as competence-based qualifications. The Requirements of competence-based qualifications describe vocational skills as working life competence requirements. The qualifications are made up of modules, which are independent work entities.

### 3.2 ARRANGING COMPETENCE-BASED QUALIFICATIONS

The qualification committees appointed by the National Board of Education and comprising the representatives of employers, employees, teachers and when necessary self-employed persons, are responsible for arranging and controlling competence-based qualifications and they award qualification certificates. The qualification committees sign contracts on arranging competence-based qualifications with education providers and when necessary other communities and foundations. Competence-based qualifications must not be arranged without a valid contract with the qualification committee concerned.

### 3.3

## COMPLETING A COMPETENCE-BASED QUALIFICATION

A competence-based qualification is completed by successfully demonstrating the skills required in practical work assignments and activities in a competence test. Each module must be assessed separately. Assessment is jointly carried out by representatives of employers, employees and the training sector. In vocational fields where self-employment is typical, this party is also to be considered when appointing assessors. The qualification committee passes the final decision on assessment. A qualification certificate can be awarded when all the modules required to make up the qualification have been completed successfully.

### 3.4

## REQUIREMENTS OF COMPETENCE-BASED QUALIFICATIONS

The Requirements of competence-based qualifications define the modules to be included in the qualification and possibly the structure of specialisation, qualification contents, vocational skills required in each module, bases of assessment (targets and criteria of assessment) as well as ways of demonstrating vocational competence.

A module is a vocational sub-entity, which can be discerned as a separately assessed entity in a natural work process. The vocational skills requirements defined in modules focus on profession specific key activities, control of processes and vocational practices relevant in the field concerned. They include the skills commonly required in working life, social skills for example.

Targets of assessment and criteria are derived from the vocational skills requirements. Targets of assessment define the sectors of competence that special attention will be paid to. Defining the targets of assessment also make it easier to assess vocational competence in the work activity concerned. Assessment must cover all the targets listed in the Requirements of competence-based qualifications. Assessment criteria determine the quality and quantity levels for a successful performance.

The ways of demonstrating vocational skills include further instructions on how to complete a qualification. The vocational skills are, in the main, demonstrated in actual work assignments or tasks. The ways of demonstrating vocational skills may also include, for example, instructions on how a test performance can be supplemented, if necessary, in order for all the skills requirements to have been successfully met.

### 3.5 INDIVIDUALISATION IN COMPETENCE-BASED QUALIFICATIONS

Education provider is responsible for individualising the enrolment for a competence-based qualification and for preparatory training, completing the qualification as well as the acquisition of the vocational skills required. The National Board of Education has issued a separate regulation on individualisation.

### 3.6 ASSESSMENT OF VOCATIONAL SKILLS IN A COMPETENCE-BASED QUALIFICATION

The assessment of vocational skills must profoundly and carefully look into how the qualification candidate has shown that he/she masters what the skills requirements of the module concerned prescribe. The assessment criteria defined in the requirements for the competence-based qualification are to be used. In assessment, a variety of different and primarily qualitative assessment methods should be used. Using one method only does not necessarily yield a reliable result. Vocational field and qualification specific special features are taken into consideration in the assessment process in accordance with the qualification requirements.

If a person completing a qualification has reliable evidence of competence demonstrated earlier, the assessors assess its correspondence with the skills requirements described in the requirements for the competence-based qualification. The assessors suggest the document to the qualification committee for recognition as part of a competence-based qualification. If the candidate has earlier demonstrated his/her skills in one of the modules of this qualification either in curriculum-based education or in a competence-based qualification, the earlier completed qualification or its module must be presented for recognition as part of the competence-based qualification to be completed. There is no general time limit to be set for the skills acquired and demonstrated earlier but the validity of such skills can be verified. The qualification committee makes the final decision on the recognition of earlier demonstrated and reliably documented skills. If necessary, the candidate must demonstrate the correspondence of his/her skills with the skills requirements of the qualification in question.

Assessing vocational skills is a process where collecting assessment material and documenting the assessment process are of key importance. The representatives of working life and teachers carry out a careful and comprehensive tri-partite assessment. Every person completing a qualification must learn the assessment criteria. The candidate must be given an opportunity to self-assess his/her performance. The provider of a competence-based qualification must draw up minutes of the assess-

ment of the module, which must be signed by the assessors. The candidate is given feedback as part of a good assessment process. The qualification committee makes the final decision on assessment.

## **Assessors**

The persons assessing the qualification candidate's vocational skills are to have good vocational skills themselves in the area of the competence-based qualification in question. The qualification committee and the provider of the competence-based qualification agree on the assessors in the contract for arranging competence-based qualifications.

## **Rectification of assessment**

A person completing a qualification can, within the time limit specified by law, request rectification of assessment from the qualification committee whose sector the qualification in question falls in. A written request of rectification is addressed to the qualification committee. Having heard the assessors, the committee can oblige them to carry out a reassessment. A qualification committee decision on a claim for rectification of assessment cannot be appealed.

## **3.7 CERTIFICATES**

Qualification committee awards a qualification certificate or a certificate on completion of a module or modules. A representative of the education provider issues a certificate on completed preparatory training respectively. "The National Board of Education has issued a regulation on the information to be included in the certificates.

A certificate on the completion of a qualification module or modules is awarded at the request of a person completing a competence-based qualification. The representatives of the qualification committee and the education provider sign the qualification certificate or a certificate given after the completion of a module or modules.

An entry in the Certificate of Vocational Skills approved by the National Board of Education in proof of completion of a competence-based qualification is comparable to a qualification certificate. The provider of the competence-based qualification acquires and signs the Certificate of Vocational Skills. A Certificate of Vocational Skills is subject to a fee.

## **3.8 PREPARATORY TRAINING FOR COMPETENCE-BASED QUALIFICATIONS**

In the case of a competence-based qualification no preconditions to attend preparatory training can be set. However, these qualifications are primarily taken in connection with such preparatory training. The education provider decides on the contents and arrangement of preparatory training for competence-based qualifications in compliance with the qualification requirements. The training and tests must be structured according to the qualification modules to be completed. A person attending such preparatory training must be provided an opportunity to participate in competence tests and complete the qualification as part of the training.



# 4

## VOCATIONAL MODULES, VOCATIONAL SKILLS REQUIREMENTS AND ASSESSMENT OF THE VOCATIONAL QUALIFICATION IN INFORMATION AND COMMUNICATIONS TECHNOLOGY

### 4.1 COMPULSORY MODULES FOR ALL

#### 4.1.1 Working in service assignments

##### **Vocational skills requirements**

The student or candidate is able to

- ◆ work in an operational process in an organisation in which he/she
  - identifies, describes and documents key operational processes and interest groups of the business
  - uses different computer applications and communication software at work
  - uses the virtual tools of social media to enhance business operations
- ◆ manage a service situation in which he/she
  - plans and prepares for the service situation
  - serves the customer
  - manages the follow-up tasks of the service situation
- ◆ conduct tasks related to the use of information technology for in-house communication and customer communication in which he/she
  - communicates electronically and in writing
  - compiles, maintains and edits statistics and reports
  - maintains the information in databases and information networks.

##### **Assessment**

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>1. Mastering the work process</b>	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project
Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
	observes the provisions and regulations pertaining to his/her field	observes the provisions and regulations pertaining to his/her field	independently observes the provisions and regulations pertaining to his/her field
	observes the labour legislation and the collective labour agreement in the industry, working according to the responsibilities and obligations of an employee	observes the labour legislation and the collective labour agreement in the industry, working according to the responsibilities and obligations of an employee and an employer	independently observes the labour legislation and the collective labour agreement in the industry, working according to the responsibilities and obligations of an employee and an employer
	works in accordance with the aesthetic principles of the field as well as the factors affecting the atmosphere of the working environment and other factors affecting the appearance of the completed work	works in accordance with the aesthetic principles of the field as well as the factors affecting the atmosphere of the working environment and other factors affecting the appearance of the completed work	works independently in accordance with the aesthetic principles of the field as well as the factors affecting the atmosphere at the working environment and other factors affecting the appearance of the completed work
	works in a way that promotes his/her own occupational wellbeing	works in a way that promotes the occupational wellbeing of the work community	works independently in a way that promotes the occupational wellbeing of the work community and examines the possibilities of an entrepreneur to promote such wellbeing
	requests advice when uncertain	requests advice in new situations	works in accordance with his/her given authority

Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives
Documentation	documents the work and its outcomes	documents the plan, the work and its outcomes according to the instructions provided	independently documents the plan, the work and its outcomes according to the instructions provided
Efficient and productive work	works efficiently while observing the allotted time and other resources	works cost-efficiently and productively while observing the allotted time and other resources	works independently, cost-efficiently and productively while observing the allotted time and other resources
	facilitates customer relations at work	facilitates permanent customer relations at work	independently facilitates continued operations and permanent customer relations at work
Observing occupational wellbeing	works in a way that promotes functional and working capacity under guidance	works to maintain a healthy lifestyle and a good functional and working capacity	works independently to maintain a healthy lifestyle and a good functional and working capacity
Active citizenship and different cultures	works in familiar situations with familiar teams and interest groups while observing different cultures.	works in a variety of situations with diverse teams and interest groups while observing different cultures.	works actively and encouragingly in a variety of situations with diverse teams and interest groups while observing different cultures.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Mastering working methods and tools	uses common working methods, ICT tools and social media	uses the appropriate working methods, ICT tools and social media	independently uses diverse and appropriate working methods, ICT tools and social media
Using databases and information networks	uses and supports the content of databases and information networks	uses and supports the content of databases and information networks as well as masters the basic structures of the HTML language	uses the content of databases and information networks in a diverse manner and supports it independently as well as masters the HTML language

Using social media	uses the opportunities offered by social media responsibly while observing the data privacy of individuals and companies	uses the opportunities offered by social media responsibly while observing the data privacy of individuals and companies	uses the opportunities offered by social media responsibly while observing the data privacy of individuals and companies
Using office software	uses the computer applications, communication software and other applications required at work with e.g. an AB-level computer driving licence	uses computer applications, communication software and other applications fluently at work with e.g. an AB-level computer driving licence	independently uses the diverse computer applications, communication software and other applications required at work with e.g. an AB-level computer driving licence
Mastering the materials	uses the appropriate materials while observing their recycling potential	uses the appropriate materials while observing their recycling potential	uses the appropriate materials while observing their recycling potential
Language proficiency for Finnish speakers	serves customers in Finnish and copes with a customer service situation with an English-speaking customer	serves customers in Finnish and in English and tolerably in Swedish	serves customers fluently in Finnish, English and Swedish
Language proficiency for Swedish speakers	serves customers in Swedish and copes with a customer service situation with an English-speaking customer	serves customers in Swedish and in English and tolerably in Finnish	serves customers fluently in Swedish, English and Finnish
Language proficiency for speakers of another language	manages a service situation in Finnish or in Swedish and copes tolerably with a service situation in another language	manages a service situation in Finnish and in Swedish and in one foreign language	serves customers in Finnish and in Swedish as well as manages a service situation flexibly in one foreign language
Language proficiency in foreign-language training	manages a service situation by using the language of instruction as well as Finnish or Swedish in addition to guiding a customer in one other language.	manages a service situation by using the language of instruction as well as Finnish or Swedish and one other language.	serves customers by using the language of instruction as well as Finnish or Swedish and manages a service situation flexibly in one other language.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Working in an ICT environment	identifies, describes and documents the key business processes and operations under guidance	identifies, describes and documents the key business processes and operations	independently identifies, describes, documents and presents the key business processes and operations
	compiles a description of the ICT environment of an organisation according to instructions	compiles a description of the ICT environment of an organisation	independently compiles a description of the ICT environment of an organisation and documents it according to instructions

Observing the working environment	ensures the functionality of his/her working environment	ensures the functionality and comfort of the working environment while observing the instructions of the company or organisation	independently ensures the functionality and comfort of the working environment while observing the instructions of the company or organisation
Behaviour at work and in the work community	examines the rules and customs of the work community in terms of his/her own work under guidance	examines the rules and customs of the work community in terms of his/her own work	independently examines the rules and customs of the work community in terms of his/her own work
Planning and preparing for a service situation	acquires and maintains data on products, services and customers under guidance	acquires and maintains data on products, services and customers	independently acquires, maintains and utilises data on products, services and customers
Working in a service situation	serves in-house and external customers in familiar situations in accordance with the service concept or instructions of the company or organisation	serves in-house and external customers in accordance with the service concept or instructions of the company or organisation	independently serves in-house and external customers in accordance with the service concept or instructions of the company or organisation in varying situations
	observes the provisions and agreements pertaining to a familiar service situation	observes the common provisions and agreements pertaining to a service situation	independently observes diverse provisions and agreements pertaining to a service situation
Managing follow-up tasks	compiles and creates backups for some work-related written reports and statistics	compiles and creates backups for work-related written reports and statistics in accordance with the instructions of the company or organisation as well as appears in the media if necessary	independently compiles and creates backups for work-related written reports and statistics in accordance with the instructions of the company or organisation as well as appears in the media if necessary
Assessing the production potential of his/her professional competence	examines the operational or business ideas as well as the key services and products of a company or organisation under guidance	examines the operational or business ideas as well as the key services and products of a company or organisation	examines the operational or business ideas as well as the key services and products of a company or organisation
		works in cooperation to acquire information about the development needs of products or services based on, for example, the needs of customers, competition or the competence within an organisation	independently acquires information about the development needs of products or services based on, for example, changes in the operational environment, the needs of customers, competition or the competence within an organisation
		acquires information on the general prerequisites of entrepreneurship	acquires information on the general prerequisites of entrepreneurship

Assessing entrepreneurship in the professional field	examines the typical cooperation partners in his/her professional field.	examines the general structure of entrepreneurship and the typical cooperation partners in his/her professional field.	independently examines the general structure and development trends of entrepreneurship and the typical cooperation partners in his/her professional field.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative
Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities

Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

### Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by working in diverse ICT service tasks. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least:

- ◆ mastering the work process, excluding assessing his/her possibilities to work as an entrepreneur, and assessing entrepreneurship in the professional field
- ◆ mastering the work method, equipment and material in its entirety
- ◆ underpinning knowledge, excluding language proficiency
- ◆ key competences for lifelong learning in its entirety.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

## 4.1.2 Purchasing and deployment of systems

### Vocational skills requirements

The student or candidate is able to

- ◆ conduct assignments related to the procurement project of hardware and software
- ◆ install the required operating systems, peripherals and basic programmes of a workstation
- ◆ configure the hardware and software at a workstation into a functional system
- ◆ connect the workstation to the network
- ◆ test the deployment of the workstation
- ◆ document the deployment of the workstation
- ◆ use devices and machinery according to the training provided by the employer, the user instructions and his/her own vocational skills and personal experience.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project



Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives
Documentation	documents the work and its outcomes	documents the plan, the work and its outcomes according to the instructions provided	independently documents the plan, the work and its outcomes according to the instructions provided
Quality-conscious and sustainable development	works according to given quality and sustainable development objectives	works according to the quality and sustainable development objectives of a company or organisation	works according to the quality and sustainable development objectives of a company or organisation
Assessing his/her possibilities to work as an entrepreneur	assesses the strengths and development needs of his/her own activities and work under guidance	assesses the strengths of his/her own activities and work as well as his/her possibilities to work as an entrepreneur in his/her professional field	assesses the strengths of his/her own activities and work as well as his/her possibilities to work as an entrepreneur in his/her professional field
			sets development targets for his/her entrepreneurial skills
Sense of initiative and entrepreneurship	carries out the tasks assigned to him/her and requests advice when necessary.	independently carries out the tasks assigned to him/her, working expeditiously.	independently carries out the tasks assigned to him/her as well as other tasks, working expeditiously.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>2. Mastering the work method, equipment and material</b>	The student or candidate		
Mastering working methods, equipment and material	uses common working methods, equipment and materials	uses diverse working methods, equipment and materials	independently uses working methods, equipment and materials in interaction with his/her work community
Working on a project	uses project tools and utilises information technology	uses project tools and utilises information technology	uses project tools and utilises information technology
	works as a member of a procurement and installation project	works as an active member of a procurement and installation project	independently works as an active and responsible member of a procurement and installation project
Installing operating systems	installs an operating system on a workstation and configures it under guidance	installs a single operating system on a workstation and configures it according to the manufacturer's instructions	independently installs two operating systems of different types on a workstation and configures them to create a functional system
Installing programmes	installs the most common computer applications and applications programs, needing occasional guidance	installs computer applications and applications programs, including open source software, and configures them according to the manufacturer's instructions	independently computer applications and applications programs, including open source software, and configures them to create a functional system
Connecting to the network	connects the new workstation to the network	connects the new workstation to the network according to instructions	independently connects the new workstation to the network according to plan
Testing a workstation	tests the functionality of a deployed workstation	tests a deployed workstation according to the manufacturer's instructions	independently tests a deployed workstation according to plan
Documenting the deployment of a workstation	documents the deployment of a workstation.	documents the deployment of a workstation according to instructions.	independently documents the deployment of a workstation.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>3. Underpinning knowledge</b>	The student or candidate		
Mastering the structure of a computer	assembles a computer, needing occasional guidance	assembles a computer according to instructions	independently selects the appropriate components and assembles a computer while observing the needs of the end user

Working in a procurement project	examines the legislation pertaining to procurements	examines the legislation pertaining to procurements according to instructions	independently examines the impact of the legislation pertaining to procurements during the procurement process
Utilising the Internet	uses Internet services at work, including services in English	uses Internet services that are relevant at work, including services in English	independently uses diverse Internet services at work, including services in English
Mastering manuals	uses devices manuals, needing occasional support and guidance	uses devices manuals, requesting advice when necessary	independently uses devices manuals
Working according to the principles of quality and sustainable development	works according to given quality and sustainable development objectives	works according to the quality and sustainable development objectives of a company or organisation	works according to the quality and sustainable development objectives of a company or organisation
	assesses environmental solutions that promote sustainable development as a competitive factor of a company or organisation under guidance	assesses environmental solutions that promote sustainable development as a competitive factor of a company or organisation under guidance	assesses environmental solutions that promote sustainable development as a competitive factor of a company or organisation under guidance
Working cost-efficiently	calculates the share of his/her own workload in the overall expenses of a product or service according to instructions	calculates the share of his/her own workload in the overall expenses of a product or service	calculates the overall expenses of a product or service at work as well as the share of his/her own workload
	applies his/her knowledge of productive operations at work.	applies his/her knowledge of productive operations at work.	applies his/her knowledge of productive operations at work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative

Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities
Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

### Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by installing and configuring a workstation and its peripherals and basic programmes into working order. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least:

- ◆ mastering the work process, excluding assessing his/her possibilities to work as an entrepreneur, and assessing entrepreneurship in the professional field
- ◆ mastering the work method, equipment and material in its entirety
- ◆ underpinning knowledge in its entirety
- ◆ key competences for lifelong learning in its entirety.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

## 4.2 STUDY PROGRAMME IN SERVICE SUPPORT

### 4.2.1 Working in service support

#### Vocational skills requirements

The student or candidate is able to

- ◆ support an ICT environment and the services provided in such an environment
- ◆ manage server software
- ◆ virtualise a server environment
- ◆ ensure the data security of an information system.

#### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project

Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives
Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>2. Mastering the work method, equipment and material</b>	The student or candidate		
Information networks and system maintenance	participates in the maintaining of an ICT environment and its services	maintains an ICT environment and its services	independently maintains an ICT environment and its services
Supporting users and user groups	creates a username and adds it to a user group	creates usernames and manages access rights through user groups	utilises a script to automate the adding of usernames and the setting of access rights
Maintaining databases	assists in the maintaining of the databases and database environments required to provide services	maintains the databases and database environments required to provide services	independently maintains the databases and database environments required to provide services
Virtualisation	installs virtualisation software including a virtualised server	creates an environment with several virtualised servers	creates and documents an environment with several virtualised servers
Managing data security	follows the data security instructions of an organisation at work	manages the data security of an information system	independently manages the data security and security updates of software and hardware

Backups	prepares for and carries out a scheduled backup	manages the backups of an information system and the retrieval of data from a backup copy	independently prepares a backup plan and carries out a backup accordingly
Solving problems with software and hardware	provides assistance in solving problems that occur during the use of software and hardware	solves problems that occur during the use of software and hardware using auditing, testing and maintenance software	independently solves and documents problematic situations that occur during the use of software and hardware using auditing, testing and helpdesk software
Enhancing work	automates his/her work using recorded macros.	enhances and automates his/her work using scripts and system tools.	enhances and automates his/her work by editing scripts and utilising system tools.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
		The student or candidate	
Knowledge of information networks	participates in the support of a local area network and remote connections while utilising the most common network protocols	supports a local area network, remote connections and their hardware while utilising the most common network protocols	plans the hardware and architecture of remote connections and a local area network while utilising the most common network protocols
Selecting software licences	monitors the period of validity of the software licences used in an organisation	maintains the software licences used in an organisation	selects the software licences that are appropriate for an organisation
Selecting server hardware and software	participates in the selection of server software	selects the appropriate server software according to instructions	independently selects the appropriate server software
Managing user information	plans and creates user groups and access rights	plans and creates user groups and access rights	plans and creates user groups and access rights
Maintaining a database	adds, deletes and edits the data in a database under guidance	adds, deletes and edits the data in a database	creates a database structure according to the specifications
Observing the legislation pertaining to data privacy	observes the general principles of the Act on the Protection of Privacy in Electronic Communications and the Personal Data File Act at work	observes the general principles of the Act on the Protection of Privacy in Electronic Communications and the Personal Data File Act at work	observes the general principles of the Act on the Protection of Privacy in Electronic Communications and the Personal Data File Act at work
Mastering backup methods	compares backup types and backup devices.	compares backup types and backup devices.	selects the appropriate backup type and backup device.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative
Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities
Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.



## **Ways of demonstrating vocational skills**

The student or candidate demonstrates his/her vocational skills by working in the maintenance tasks of a server environment. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least:

- ◆ mastering the work process in its entirety
- ◆ mastering the work method, equipment and material, excluding virtualisation
- ◆ underpinning knowledge in its entirety
- ◆ key competences for lifelong learning in its entirety.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

## **4.2.2 Implementation of and support for services**

### **Vocational skills requirements**

The student or candidate is able to

- ◆ install and standardise hardware, applications and network connections
- ◆ provide services for an information network
- ◆ install online services on a workstation
- ◆ provide training, guidance and support for customers
- ◆ document the deployment of an ICT device or system.

### **Assessment**

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>1. Mastering the work process</b>	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project
Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives
Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>2. Mastering the work method, equipment and material</b>	The student or candidate		
Installing hardware and software	installs work station hardware, applications and network connections according to instructions	installs work station hardware, applications and essential network connections that are suitable for the customer	independently installs work station hardware, applications and essential network connections that are suitable for the customer
Standardising workstations	standardises workstations by cloning a system image to other workstations in an environment with multiple workstations	creates a system image and clones it to standardise the workstations in an environment with multiple workstations	designs and creates a system image and clones it to standardise the workstations in an environment with multiple workstations

Producing information network services	assists in the support of services in an information network	maintains support in an information network	produces information network services for a server
Deployment of information network services	configures services for a customer's workstation according to instructions	configures the services requested by a customer for workstations	configures situation-specific services for the workstations of a customer
Working in customer service tasks	assists in providing service support during customer service assignments	provides service support during customer service assignments	independently provides service support during customer service assignments
Handling service requests	participates in the handling and documentation of service requests from customers	handles and documents service requests from customers	independently handles service requests from customers and documents them according to company procedure
Guiding a customer	helps a customer in using office software, applications and information network services	helps a customer in using diverse office software, applications and information network services	helps a customer to enhance his/her operations by utilising the advanced properties of office software and applications as well as information network services
Providing training	helps in providing training and guidance	is responsible for providing part of the training or guidance	independently organises training and guides users
Guidance during deployment	participates in guiding a customer during the deployment of hardware and software	guides a customer during the deployment of hardware and software	guides a customer during the deployment of hardware and software
Securing data	secures the workstation using a firewall and antivirus software	secures the data processed in an information network according to instructions	independently secures the data processed in an information network service while observing the sensitivity of the data
Backups	creates backup copies of some of the data on a server	creates backup copies of the data on a server according to instructions	independently manages the backup copies of the data on a server according to the instructions of the organisation
Ensuring the functionality of a system	tests the functionality of the work station hardware that he/she has installed according to instructions	tests the server hardware, applications and network connections that he/she has installed	independently tests the work station hardware, applications and network connections that he/she has installed according to the customer's policies
Documenting the installation	documents the work station hardware and applications that he/she has installed	documents the work station hardware and applications that he/she has installed	independently documents the work station hardware, applications and network connections according to the customer's policies

Compiling user instructions	updates user instructions.	compiles the required user instructions based on a model.	compiles user instructions that support the operations of the customer.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
<b>3. Underpinning knowledge</b>	<b>Satisfactory 1</b>	<b>Good 2</b>	<b>Excellent 3</b>
	The student or candidate		
Using a mobile device	assesses the accessibility of services from mobile devices	assesses the accessibility of services from mobile devices	assesses the accessibility of services from mobile devices
Planning training	participates in the planning of training and guidance	plans training and guidance according to the instructions provided	plans training and guidance that meets the needs of the customer
Providing guidance about ergonomics at the workplace	helps a customer to use ergonomic solutions at the workplace	helps and guides a customer to introduce and use ergonomic solutions at the workplace	independently helps and guides a customer to plan and implement ergonomic solutions at the workplace
Maintaining data security	works to ensure data security while understanding its significance in the operations of the organisation	works to ensure data security while understanding its significance in the operations of the organisation	works to ensure data security while understanding its significance in the operations of the organisation
Solving problems	describes problems occurring during the use of hardware and services to experts and service providers	assists experts and service providers in solving problems that occur during the use of hardware and services	solves problems that occur during the use of hardware and services in cooperation with experts and service providers
Planning and documenting deployment	participates in planning and documenting the deployment of an ICT device or system	plans and documents the deployment of an ICT device or system according to instructions	independently plans and documents the deployment of an ICT device or system
Using the English language	is familiar with the essential field-specific terminology in English.	acquires work-related information from sources in English.	utilises English sources of information at work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
<b>4. Key competences for lifelong learning</b>	<b>Satisfactory 1</b>	<b>Good 2</b>	<b>Excellent 3</b>
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative

Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities
Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

### Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by working in information system support tasks. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise in their entirety:

- ◆ mastering the work process in its entirety
- ◆ mastering the work method, equipment and material in their entirety
- ◆ underpinning knowledge in its entirety
- ◆ key competences for lifelong learning in their entirety

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

## 4.3 STUDY PROGRAMME IN SOFTWARE DEVELOPMENT

### 4.3.1 Software specification and design

#### Vocational skills requirements

The student or candidate is able to

- ◆ specify the data and functions of a programme
- ◆ design the structure of a programme
- ◆ prepare a technical specification for a programme.

#### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project

Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives
Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Data specification	compiles the data content of a programme component into a model (e.g. a conceptual schema) based on the requirements	compiles the data content of a programme into a model (e.g. a conceptual schema) according to instructions	independently compiles the data content of a programme into a model (e.g. a conceptual schema)
Function specification	lists the functions of a programme component and prepares a description (e.g. a use case description or a user story) for one function	lists the functions of a programme according to instructions and prepares descriptions (e.g. use case descriptions or a user story) for the functions	independently lists the functions of a programme and prepares descriptions (e.g. use case descriptions or a user story) for the functions
Creating a database	creates a relational database using a database management system	creates a relational database according to instructions using a database management system	independently creates a relational database using a database management system

Designing a user interface	designs and creates a user interface prototype for a programme component and tests its functionality	designs and creates a user interface prototype for a programme according to instructions and tests its functionality and usability	independently designs and creates a user interface prototype for a programme and tests its functionality and usability
Test planning	plans programme test cases under guidance	plans programme test cases according to instructions	independently plans programme test cases
Project planning	uses a project management programme to create a chart (e.g. a Gantt chart) where project tasks are scheduled.	uses a project management programme according to instructions to create a project partition and a chart (e.g. a Gantt chart) where project stages and tasks are scheduled.	independently uses a project management programme to create a project partition and a chart (e.g. a Gantt chart) where project stages and tasks are scheduled.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>3. Underpinning knowledge</b>	The student or candidate		
Creating a data model	creates a data model (e.g. an Entity-Relationship Model) for a programme component	creates a data model (e.g. an Entity-Relationship Model) for a programme according to instructions	independently creates a data model (e.g. an Entity-Relationship Model) for a programme
Creating an operations model	creates diagrams (e.g. UML diagrams) that demonstrate the operations of a programme under guidance	creates diagrams (e.g. UML diagrams) that demonstrate the operations of a programme according to instructions	independently creates diagrams (e.g. UML diagrams) that demonstrate the operations of a programme
Documentation and classification	prepares specification document to define the production of a programme component under guidance	prepares specification document to define the production of a programme component according to instructions	independently specification document to define the production of a programme component
	writes down the minutes of an inspection (e.g. a review) based on a model	writes down the minutes of an inspection (e.g. a review) according to instructions	independently writes down the minutes of an inspection (e.g. a review)
Designing structured data	designs and creates a file (e.g. an XML file) that contains structured data	designs and creates a file (e.g. an XML file) that contains structured data according to instructions	independently designs and creates a file (e.g. an XML file) that contains structured data
Designing a database	designs database tables (using e.g. SQL) while observing referential integrity	designs database tables (using e.g. SQL) according to instructions while observing referential integrity and tests the functionality of the database	independently designs database tables and indices (using e.g. SQL) while observing referential integrity and tests the functionality of the database



Designing a user interface	designs user interfaces and the navigation of a programme component	designs user interfaces, the navigation and the usability of a programme according to instructions	independently designs user interfaces, the navigation and the usability of a programme
Test planning	prepares a testing plan according to a testing model (e.g. a V-model) under guidance	prepares a testing plan according to a testing model (e.g. a V-model) according to instructions	independently prepares a testing plan according to a testing model (e.g. a V-model)
Deployment planning	prepares an deployment plan for a programme component	prepares an deployment plan for a programme according to instructions	independently prepares an deployment plan for a programme
Project planning	prepares a project plan and a final report under guidance	prepares a project plan and a final report according to instructions	independently prepares a project plan and a final report
Documentation	prepares the technical specifications of a programme under guidance	prepares the technical specifications of a programme according to instructions	independently prepares the technical specifications of a programme
	prepares simple documentation in English.	prepares documentation in English.	prepares documentation in fluent English while using a wide range of technical vocabulary.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative
Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team

Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities
Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

### Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by working in design tasks in a software engineering project. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise in their entirety:

- ◆ mastering the work process
- ◆ mastering the work method, equipment and material
- ◆ underpinning knowledge
- ◆ key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

## 4.3.2 Software implementation

### Vocational skills requirements

The student or candidate is able to

- ◆ plan software implementation
- ◆ implement software
- ◆ test and document software.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project
Implementation	works according to plan while observing work instructions, working hours and agreements	works on his/her own initiative and according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives

Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Software implementation	implements the functions contained in a programme component	implements the functions contained in a programme according to instructions	independently implements the functions contained in a programme
	connects the programme to a relational database under guidance	connects the programme to a relational database according to instructions	independently connects the programme to a relational database
	creates elements of the graphical or web-based user interface of a programme	creates the graphical or web-based user interface of a programme according to instructions	independently creates the graphical or web-based user interface of a programme
Software testing	tests the functionality of a programme component using test cases.	tests the functionality of a programme according to instructions	independently tests the functionality of a programme.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Software design	prepares a software implementation plan under guidance	prepares a software implementation plan according to instructions	independently prepares a software implementation plan
Software implementation	creates a programme component by using a programming language or by utilising an integrated development environment	creates a programme by using a programming language or by utilising an integrated development environment according to instructions	independently creates a programme by using a programming language or by utilising an integrated development environment
	creates a simple database query (using e.g. SQL)	creates database queries (using e.g. SQL)	creates structured and effective database queries (using e.g. SQL)
	creates the production version of a programme component	creates the production version of a programme according to instructions	independently creates the production version of a programme

Software testing	creates test cases	creates test cases according to instructions	independently creates test cases
	creates test cases to test the data security of a programme under guidance	creates test cases to test the data security of a programme according to instructions	independently creates test cases to test the data security of a programme
	prepares the test report of a programme component	prepares the test report of a programme according to instructions	independently prepares the test report of a programme
Testing the data security of software	assesses the data security of an information system under guidance	assesses the data security of an information system according to instructions	independently assesses the data security of an information system
Software documentation	prepares a module or class diagram for a programme component	prepares a module or class diagram for a programme according to instructions	independently prepares a module or class diagram for a programme
	inserts several comments into the software code	comments on the software code according to instructions	independently comments on the software code
	prepares installation and user instructions for a programme component.	prepares installation and user instructions for a programme according to instructions.	independently prepares installation and user instructions for a programme.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative
Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team

Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities
Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

### Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by working in project tasks involving software engineering. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise in their entirety:

- ◆ mastering the work process
- ◆ mastering the work method, equipment and material
- ◆ underpinning knowledge
- ◆ key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

## 4.4 OPTIONAL MODULES FOR ALL

### 4.4.1 Multimedia production

#### Vocational skills requirements

The student or candidate is able to

- ◆ plan the production process of multimedia
- ◆ design multimedia products
- ◆ produce multimedia products
- ◆ use and apply software products, hardware and technology related to the multimedia industry
- ◆ document the production process.

#### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project
Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment

Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives
Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Mastering the working methods	uses common basic ideas and methods of multimedia design	uses basic ideas and methods of multimedia design	independently uses and applies basic ideas and methods of multimedia design
Mastering hardware and software	uses the required hardware and software at work and supports them	uses the hardware and software of an organisation carefully and supports them	uses the hardware and software of an organisation carefully and independently as well as supports them according to the organisation's instructions
Production	produces a multimedia presentation that contains text, sound, images, video and animation	produces a multimedia presentation that contains text, sound, images, video and animation according to instructions	independently produces a multimedia presentation that contains text, sound, images, video and animation according to plan
	produces components of a graphical user interface required by an interactive media product	produces a graphical user interface required by an interactive media product	independently produces a graphical user interface required by an interactive media product
Editing	edits sound and images into a digital form	edits a variety of sounds and images into a digital form	independently edits a variety of sounds and images into a digital form
Saving	saves multimedia products as familiar file formats	saves multimedia products as different file formats	independently saves multimedia products as different file formats
Testing	tests the functionality of a multimedia product using test cases	tests the functionality of a multimedia product according to instructions	independently tests the functionality of a multimedia product
Resource management	prepares a cost estimate and a production timeline using office software under guidance	prepares a cost estimate and a production timeline using office software	independently prepares a cost estimate and a production timeline using suitable office software



Aesthetics	works in accordance with the aesthetic principles of the field as well as the factors affecting the atmosphere of the working environment and other factors affecting the appearance of the completed work	works in accordance with the aesthetic principles of the field as well as the factors affecting the atmosphere of the working environment and other factors affecting the appearance of the completed work	utilises the aesthetic principles of the field in a diverse manner and works to promote a pleasant atmosphere in the working environment and to improve other factors affecting the appearance of the completed work
Documenting the production process	documents the production process	documents the production process according to instructions	independently documents the production process
Working on a project	uses project tools while utilising information technology.	uses project tools while utilising information technology.	uses project tools while utilising information technology.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
<b>3. Underpinning knowledge</b>	<b>Satisfactory 1</b>	<b>Good 2</b>	<b>Excellent 3</b>
	The student or candidate		
Mastering file formats	uses different file formats in image and sound processing	uses key file formats in image and sound processing	independently uses different file formats in image and sound processing
Mastering narration techniques	uses narration techniques in visual and auditory media	uses diverse narration techniques in visual and auditory media	applies diverse narration techniques in visual and auditory media
Preparing user instructions	prepares installation and user instructions	prepares installation and user instructions according to instructions	independently prepares installation and user instructions
Observing legal provisions	observes the Copyright Act at work.	observes the Copyright Act at work.	observes the Copyright Act at work.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
<b>4. Key competences for lifelong learning</b>	<b>Satisfactory 1</b>	<b>Good 2</b>	<b>Excellent 3</b>
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative

Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities
Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

### Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by designing and producing a multimedia presentation. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise in their entirety:

- ◆ mastering the work process
- ◆ mastering the work method, equipment and material
- ◆ underpinning knowledge
- ◆ key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

## 4.4.2 Electronic service production

### Vocational skills requirements

The student or candidate is able to

- ◆ examine the possibilities to use e-services to enhance business operations
- ◆ identify the information needs and the purpose of e-services
- ◆ design e-services for which he/she
  - designs the user interface
  - designs the required databases
- ◆ produce e-services for which he/she
  - produces a user interface
  - produces the required databases
  - sets up connections to the databases
- ◆ document the production of e-services.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
1. Mastering the work process	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project

Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives
Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>2. Mastering the work method, equipment and material</b>	The student or candidate		
Selecting and using design methods	selects and uses the appropriate design methods	selects and uses the appropriate design methods according to instructions	independently selects and uses the appropriate design methods
Compiling data content	compiles the data content of e-services based on the requirements	compiles the data content of e-services based on the requirements according to instructions	independently compiles the data content of e-services based on the requirements
Preparing use cases	defines use cases for e-services and prepares one use case description	defines use cases for e-services according to instructions and prepares use case descriptions	defines use cases for e-services independently and prepares key use case descriptions
Designing a database		designs a database according to instructions	independently designs a database
Producing a database	produces a database based on a given design	produces a database according to a design	independently produces an optimised database according to a design
Designing a user interface	designs a user interface for e-services, occasionally needing guidance	designs a user interface for e-services according to instructions	independently designs a user interface for e-services

Producing a user interface	produces a graphical user interface for e-services based on a given design under guidance	produces a graphical user interface for e-services based on a given design	independently produces a graphical user interface for e-services based on a given design
Setting up database connections	sets up database connections under guidance	sets up database connections according to instructions	independently sets up database connections
Testing	designs test cases for a system under guidance	designs test cases for a system according to instructions	independently designs test cases for a system
	tests the functionality of a user interface for e-services using test cases	tests the functionality of a user interface for e-services using test cases	independently tests the functionality and usability of a user interface for e-services using diverse test cases
Documenting the production process	documents the production process	documents the production process according to instructions	independently documents the production process
Working on a project	uses project tools while utilising information technology.	uses project tools while utilising information technology.	uses project tools while utilising information technology.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Potential uses of e-services	examines the potential uses of familiar e-services	examines the potential uses of e-services	independently examines the potential uses of e-services
Mastering the basic techniques of e-services	uses the basic techniques of e-services	independently uses the basic techniques of e-services	independently uses and applies the basic techniques of e-services
Programming e-services	programmes e-services under guidance by using a programming language or by utilising off-the-shelf software	programmes e-services by using a programming language or by utilising off-the-shelf software	independently programmes e-services by using a programming language or by utilising off-the-shelf software
Creating a database query	creates a database query	creates database queries	creates structured and effective database queries
Compiling a test report	compiles a test report	compiles a test report according to instructions	independently compiles a test report
Preparing deployment and maintenance documentation	prepares deployment and maintenance documentation for e-services under guidance	prepares deployment and maintenance documentation for e-services according to instructions	independently prepares deployment and maintenance documentation for e-services
Observing the legislation	observes the legislation pertaining to e-services.	examines and observes the legislation pertaining to e-services.	independently examines and observes the legislation pertaining to e-services.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative
Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities
Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

## **Ways of demonstrating vocational skills**

The student or candidate demonstrates his/her vocational skills by designing and producing a small-scale electronic service. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise in their entirety:

- ◆ mastering the work process
- ◆ mastering the work method, equipment and material
- ◆ underpinning knowledge
- ◆ key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

### **4.4.3 Server software management and virtualisation**

#### **Vocational skills requirements**

Within selected operating system environments, the student or candidate is able to

- ◆ create a domain and its specifications
- ◆ manage the access rights of server software
- ◆ define and introduce services
- ◆ monitor the use of system resources
- ◆ ensure the data security of a system
- ◆ design and produce an environment for virtualisation
- ◆ create a virtual workstation
- ◆ install an operating system on a virtual workstation
- ◆ manage an environment for virtualisation.

#### **Assessment**

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>1. Mastering the work process</b>	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project
Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives
Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>2. Mastering the work method, equipment and material</b>	The student or candidate		
Introducing services	introduces the requested services	introduces the requested services	defines and introduces the requested services
Managing access rights	adds a new user and sets their access rights	creates and manages users, user groups and their rights	manages and monitors users, user groups and their rights
Monitoring resources	uses operating system tools to monitor the use of system resources	monitors the use of system resources and reports any deviations he/she detects	monitors the use of system resources and reports and resolves any problems he/she detects
Backups	creates backup copies of system data	creates backup copies of data according to company procedure	independently creates backup copies of data according to company procedure



Ensuring fault tolerance	uses the fault tolerance properties of a system	uses and monitors the fault tolerance properties of a system	designs and improves the fault tolerance of systems
Remote control of a system	remotely controls a system using a selected technique	remotely controls a system using a selected technique	identifies various techniques to remotely control a system
Producing an environment for virtualisation	produces an environment for virtualisation under guidance	produces an environment for virtualisation according to instructions	designs and produces an environment for virtualisation
Creating a virtual workstation	creates a virtual workstation	creates a virtual workstation according to instructions and identifies the available resources	creates a virtual workstation and plans the use of resources
	installs an operating system onto a virtual workstation	installs an operating system onto a virtual workstation and assigns the hardware and service resources	installs an operating system onto a virtual workstation and optimises the hardware and service resources
Maintaining an environment for virtualisation	works in the support of an environment for virtualisation	participates in the support of an environment for virtualisation	supports an environment for virtualisation
Working on a project	uses project tools while utilising information technology.	uses project tools while utilising information technology.	uses project tools while utilising information technology.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Creating a domain	creates a domain	plans and creates a domain according to instructions	independently plans and creates a domain based on the requirements
Identifying the server roles in a domain	participates in creating the server roles in a domain	creates the server roles in a domain according to instructions	independently identifies and creates the server roles in a domain based on the requirements
Managing the access rights of an information system	sets the access rights of an information system according to instructions	sets and monitors the access rights of an information system	plans, sets and monitors the access rights of an information system
Server virtualisation		compares the properties of a virtual and a non-virtual server environment.	assesses the benefits of virtualisation to an organisation's server environment.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative
Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities
Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

## **Ways of demonstrating vocational skills**

The student or candidate demonstrates his/her vocational skills by working in information system support tasks. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise at least:

- ◆ mastering the work process in its entirety
- ◆ mastering the work method, equipment and material in its entirety
- ◆ underpinning knowledge, excluding identifying the server roles in a domain
- ◆ key competences for lifelong learning in its entirety.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

### **4.4.4 Cross-media publishing**

#### **Vocational skills requirements**

The student or candidate is able to

- ◆ plan the material content for cross-media publication systems
- ◆ produce the material content of a cross-media publication
- ◆ plan a cross-media publication
- ◆ produce a cross-media publication
- ◆ use the software products, hardware and technology of a cross-media publication system
- ◆ document the production of a cross-media publication.

#### **Assessment**

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>1. Mastering the work process</b>	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project
Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives
Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>2. Mastering the work method, equipment and material</b>	The student or candidate		
Mastering the working methods	uses the basic ideas and methods of channel planning	uses the basic ideas and methods of channel planning according to instructions while observing the technical limitations	independently uses and applies the basic ideas and methods of channel planning while observing the technical limitations
Mastering hardware and software	uses the hardware and software required at work and supports them	uses the hardware and software of an organisation carefully and supports them	uses the hardware and software of an organisation carefully and independently and supports them according to the instructions of the organisation

Selecting material	selects suitable material for a publishing channel	selects suitable material for a publishing channel according to instructions	independently selects suitable material for a publishing channel according to plans
Editing material	applies common design principles and software of cross-media publishing	applies the design principles and software of cross-media publishing according to instructions	independently applies the design principles and software of cross-media publishing according to plans
	uses the frame structures of a cross-media publishing system under guidance	uses the frame structures of a cross-media publishing system	independently uses the frame structures of a cross-media publishing system
Saving material	saves material for the needs of a different publishing channel	saves material for the needs of a different publishing channel according to instructions	independently saves material for the needs of a different publishing channel according to plans
Implementation	processes material according to the profile of the publishing channel under guidance	processes material according to the profile of the publishing channel according to instructions	independently processes material according to the profile of the publishing channel
Testing	uses test cases to test the functionality of a cross-media publication	uses diverse test cases to test the functionality of a cross-media publication according to the instructions provided	independently uses diverse test cases to test the functionality of a cross-media publication
Resource management	uses a common computer application to prepare a cost estimate and production timeline under guidance	uses a common computer application to prepare a cost estimate and production timeline	uses a suitable common computer application to independently prepare a cost estimate and production timeline
Aesthetics	works in accordance with the aesthetic principles of the field as well as the factors affecting the atmosphere of the working environment and other factors affecting the appearance of the completed work	works in accordance with the aesthetic principles of the field as well as the factors affecting the atmosphere of the working environment and other factors affecting the appearance of the completed work	utilises the aesthetic principles of the field in a diverse manner and works to promote a pleasant atmosphere in the working environment and to improve other factors affecting the appearance of the completed work
Documenting the production process	documents the production process	documents the production process according to instructions	independently documents the production process
Working on a project	uses project tools while utilising information technology.	uses project tools while utilising information technology.	uses project tools while utilising information technology.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Planning	plans the metadata of a cross-media publication under guidance	plans the metadata of a cross-media publication according to instructions	independently plans the metadata of a cross-media publication according to instructions
	plans the layout and usability in terms of each individual medium under guidance	plans the layout and usability in terms of each individual medium according to instructions	independently plans the layout and usability in terms of each individual medium
Mastering XML	uses XML under guidance	uses XML	independently uses XML
Mastering the techniques	uses the basic techniques of cross-media publishing.	uses diverse techniques of cross-media publishing.	uses and applies diverse techniques of cross-media publishing.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative
Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities

Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

## Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning and producing content for cross-media publishing systems. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise in their entirety:

- ◆ mastering the work process
- ◆ mastering the work method, equipment and material
- ◆ underpinning knowledge
- ◆ key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

## 4.4.5 Database management

### Vocational skills requirements

The student or candidate is able to

- ◆ install a database management system
- ◆ create and manage databases and user accounts
- ◆ monitor and optimise database operations.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project
Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives



Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Installing	installs a database management system	installs a database management system according to instructions and tests its functionality	independently installs a database management system and tests its functionality
Managing user accounts	creates user accounts based on an example	creates user accounts according to instructions	independently creates user accounts
Maintaining	creates database areas under guidance	creates database areas according to instructions	independently creates database areas
	creates a single database	creates databases according to instructions	independently creates databases
	creates an export file of the database under guidance	creates an export file of the database according to instructions	independently creates an export file of the database
Documenting	prints the database structure	prints the database structure as a diagram and a list according to instructions	independently prints the database structure as a diagram and a list
Working on a project	uses project tools while utilising information technology.	uses project tools while utilising information technology.	uses project tools while utilising information technology.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Managing user accounts	sets access rights based on an example	sets access rights according to instructions	independently sets access rights
Maintaining	maintains database areas and logs under guidance	maintains database areas and logs according to instructions	independently maintains database areas and logs
	creates views within a database	creates views within a database according to instructions and tests their functionality	independently creates views within a database and tests their functionality
	manages transaction processing in a database under guidance	manages transaction processing in a database	manages transaction processing and indices in a database
	optimises a query based on an example.	optimises a query according to instructions.	independently optimises a query.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative
Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities
Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

## **Ways of demonstrating vocational skills**

The student or candidate demonstrates his/her vocational skills by working in an organisation that utilises information and communications technology. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise in their entirety:

- ◆ mastering the work process
- ◆ mastering the work method, equipment and material
- ◆ underpinning knowledge
- ◆ key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

## **4.4.6 Use of an integrated development environment**

### **Vocational skills requirements**

The student or candidate is able to

- ◆ identify the software project using a selected integrated development environment (IDE)
- ◆ design the software using a selected IDE
- ◆ implement the software using a selected IDE
- ◆ test and document the software using a selected IDE.

### **Assessment**

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>1. Mastering the work process</b>	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project
Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives
Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>2. Mastering the work method, equipment and material</b>	The student or candidate		
Identifying a software project	identifies the file structure of a software project under guidance	identifies the file structure of a software project according to instructions	independently identifies the file structure of a software project
Designing software	creates a class or a module diagram for a programme component	creates a class or a module diagram for a programme according to instructions	independently creates a class or a module diagram for a programme

Implementation	creates elements of the user interface of a programme	creates the user interface of a programme according to instructions	independently creates the user interface of a programme
	programmes the functions of the user interface of a software component	programmes the functions of a user interface according to instructions	independently programmes the functions of a user interface
	creates the required data storage of a programme under guidance	creates the required data storage of a programme according to instructions	independently creates the required data storage of a programme
	creates connections between the programme and the data storage under guidance	creates connections between the programme and the data storage according to instructions	independently creates connections between the programme and the data storage
	produces a release version of a programme component	produces a release version of a programme according to instructions	independently produces a release version of a programme
Testing software	tests programme components	tests software according to instructions	independently tests software
Working on a project	uses project tools while utilising information technology.	uses project tools while utilising information technology.	uses project tools while utilising information technology.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Identifying a software project	identifies the architecture and visibility rules of a software project under guidance	identifies the architecture and visibility rules of a software project according to instructions	independently identifies the architecture and visibility rules of a software project
Designing software	designs a software component	designs software according to instructions	independently designs software
	designs the required data storage of a programme under guidance	designs the required data storage of a programme according to instructions	independently designs the required data storage of a programme
	designs the connections between a programme and a data storage under guidance	designs the connections between a programme and a data storage according to instructions	independently designs the connections between a programme and a data storage
Implementing software	programmes the operational logic of a software component	programmes the operational logic according to instructions	independently programmes the operational logic
Testing the data security of software	assesses the data security of an information system according to instructions.	assesses the data security of an information system according to instructions.	independently assesses the data security of an information system.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative
Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities
Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

## **Ways of demonstrating vocational skills**

The student or candidate demonstrates his/her vocational skills by working in software engineering tasks. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise in their entirety:

- ◆ mastering the work process
- ◆ mastering the work method, equipment and material
- ◆ underpinning knowledge
- ◆ key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

## **4.4.7 Testing**

### **Vocational skills requirements**

The student or candidate is able to

- ◆ plan software testing
- ◆ test software using a selected testing environment
- ◆ compile a test report.

### **Assessment**

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>1. Mastering the work process</b>	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project
Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives
Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>2. Mastering the work method, equipment and material</b>	The student or candidate		
Planning	prepares a testing plan under guidance	prepares a testing plan according to instructions	independently prepares a testing plan
	designs test cases for a software component	designs test cases according to instructions	independently designs test cases
Implementation	creates a testing environment based on a model	creates a testing environment according to instructions	independently creates a testing environment
	carries out some of the software tests	carries out software testing according to instructions	independently carries out software testing
Working on a project	uses project tools while utilising information technology.	uses project tools while utilising information technology.	uses project tools while utilising information technology.



TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Planning	plans the tests of a software component	plans software testing according to instructions	independently plans software testing
	identifies the correct outcomes of test cases under guidance	identifies the correct outcomes of test cases according to instructions	independently identifies the correct outcomes of test cases
Documentation	compiles a test report based on a model.	compiles a test report according to instructions.	independently compiles a test report.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative
Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities

Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

### Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by working in software engineering tasks. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise in their entirety:

- ◆ mastering the work process
- ◆ mastering the work method, equipment and material
- ◆ underpinning knowledge
- ◆ key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

## 4.4.8 Utilisation of information systems

### Vocational skills requirements

The student or candidate is able to

- ◆ participate in the procurement of information systems
- ◆ install an information system and take part in its deployment
- ◆ update the description of the ICT environment of an organisation.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>1. Mastering the work process</b>	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project
Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives

Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.
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TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Installation	installs an information system under guidance	installs an information system according to instructions	independently installs an information system
	configures the settings of the information system using given values	configures the settings of the information system according to instructions	independently configures the settings of the information system
Deployment	takes part in converting data under guidance	takes part in converting data according to instructions	independently takes part in converting data
	provides assistance in training users	trains users according to instructions	independently trains users
Maintaining	installs updates for information systems under guidance	installs updates for information systems according to instructions	independently installs updates for information systems
Working on a project	uses project tools while utilising information technology.	uses project tools while utilising information technology.	uses project tools while utilising information technology.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Procurement of an information system	participates in comparing potential software products prior to acquisition	compares potential software products prior to acquisition according to instructions	independently compares potential software products prior to acquisition
	participates in examining the hardware requirements of a selected software product as a member of a team	participates in examining the hardware requirements of a selected software product according to instructions	independently participates in examining the hardware requirements of a selected software product
Documentation	prepares instructions based on a model	prepares instructions according to instructions	independently prepares instructions
	updates the description of the ICT environment of an organisation based on a model.	updates the description of the ICT environment of an organisation according to instructions.	independently updates the description of the ICT environment of an organisation.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative
Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities
Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

## Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by working in an organisation that utilises information and communications technology. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise in their entirety:

- ◆ mastering the work process
- ◆ mastering the work method, equipment and material
- ◆ underpinning knowledge
- ◆ key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

### 4.4.9 Data security management

#### Vocational skills requirements

The student or candidate is able to

- ◆ plan the data security policies of an organisation
- ◆ supervise the safety of network traffic
- ◆ document any disorders detected
- ◆ provide guidance and support in the safe use of workstations.

#### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>1. Mastering the work process</b>	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project
Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes independently with new and changing situations	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives
Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>2. Mastering the work method, equipment and material</b>	The student or candidate		
Installation	installs antivirus and firewall software on a workstation	installs antivirus and firewall software on a workstation according to instructions and tests the usability of the software	independently installs antivirus and firewall software on a workstation and tests the usability of the software
Supervision	scans network server ports under guidance	scans network server ports according to instructions and records any deviations	independently scans network server ports and records any deviations
	isolates data packages from network traffic and examines them under guidance	isolates data packages from network traffic and examines them according to instructions	independently isolates data packages from network traffic and examines them

Maintaining	manages network user accounts	manages network user accounts and resources according to instructions	independently manages network user accounts and resources
	updates the data security on a workstation	assesses the need for a data security update on a workstation and installs updates	assesses the need for a data security update on workstations and prepares update instructions
	secures a wireless network under guidance	secures a wireless network according to instructions	independently secures a wireless network
	creates backup copies according to instructions	creates backup copies and retrieves data according to instructions	prepares a data backup plan
Working on a project	uses project tools while utilising information technology.	uses project tools while utilising information technology.	uses project tools while utilising information technology.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Providing guidance	follows data security instructions at work	follows data security instructions at work and provides guidance to other users	follows data security instructions at work and trains users
	follows the data security instructions for remote work according to instructions	follows the data security instructions for remote work and provides guidance to other users	follows the data security instructions for remote work and trains users
Maintaining data security	is familiar with the most common malware	identifies diverse malware and strives to prevent damage	identifies diverse malware and prepares instructions for dealing with problems
	selects the appropriate encryption method under guidance	selects the appropriate encryption method according to instructions	independently selects the appropriate encryption method
Documentation	prepares a description of a person data file based on a model	prepares a description of a person data file according to instructions	independently prepares a description of a person data file according to instructions
	conducts a risk analysis of a workstation based on a model	conducts a risk analysis of an information system according to instructions	independently conducts a risk analysis of an information system
	prepares a disaster recovery plan for a local area network based on a model.	prepares a disaster recovery plan for a local area network according to instructions.	independently prepares a disaster recovery plan for a local area network.



TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative
Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities
Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

## Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by working in an organisation that utilises information and communications technology. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise in their entirety:

- ◆ mastering the work process
- ◆ mastering the work method, equipment and material
- ◆ underpinning knowledge
- ◆ key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

### 4.4.10 Standardisation of service support processes

#### Vocational skills requirements

The student or candidate is able to

- ◆ examine the needs of the production processes in a company
- ◆ identify service support processes
- ◆ standardise the processes using a standardisation method.

#### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>1. Mastering the work process</b>	The student or candidate		
Planning	plans and prepares for assignments under guidance	plans and prepares for assignments	independently plans and prepares for a work project
Implementation	works according to plan while observing work instructions, working hours and agreements	works independently according to plan and manages his/her assignments from beginning to end, taking responsibility for his/her own share of the work	works independently and quality-consciously according to plan
	assesses the success of his/her own work according to the instructions provided	assesses the success of his/her own work as the work progresses and copes with new and changing situations on his/her own initiative	independently assesses the success of his/her own work, justifies his/her assessment, as well as assesses and develops his/her own working methods and environment
Testing	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	assesses the outcome of his/her own work based on the quality objectives and works according to the feedback that he/she receives	independently assesses the outcome of his/her own work based on the quality objectives and as part of a broader entity and works according to the feedback that he/she receives
Documentation	documents the work and its outcomes.	documents the plan, the work and its outcomes according to the instructions provided.	independently documents the plan, the work and its outcomes according to the instructions provided.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>2. Mastering the work method, equipment and material</b>	The student or candidate		
Examining the information needs of production processes	assists in examining the IT outputs of production processes in a company	examines the kinds of IT outputs that are required in the production processes of a company	conducts a survey of the IT outputs required in the production processes of a company
Documentation of service support processes	documents a given service support process	documents the most common service support processes	identifies and documents service support processes
Process standardisation	participates in the standardisation of processes using standardisation software	standardises processes using standardisation software according to instructions	independently standardises processes using standardisation software
Working on a project	uses project tools while utilising information technology.	uses project tools while utilising information technology.	uses project tools while utilising information technology.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Process standardisation	participates in assessing the advantages and disadvantages of process standardisation.	assesses the advantages and disadvantages of process standardisation when standardising processes.	maximises the advantages of process standardisation and prevents problems caused by standardisation.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Learning and problem-solving	needs guidance and support in changing situations and when making choices	works appropriately in changing situations and when making choices	works independently and appropriately in diverse situations and discovers alternative ways to work
	acquires information from familiar sources	acquires information from familiar sources	independently acquires information from different sources using his/her own initiative
Interaction and cooperation	observes the instructions provided for interactive situations when working in his/her learning and work community	works in diverse interactive situations in his/her learning and work community as required by the situation	expresses his/her opinion clearly and constructively introduces different points of view
	works in a familiar work community and team	works with different kinds of people in a work community and team	works cooperatively with different kinds of people as a member of a work community and team
Vocational ethics	follows the ethical guidelines provided	follows the ethical guidelines provided	works in accordance with the values of the company or organisation and observes vocational ethics
	observes professional confidentiality	observes professional confidentiality	observes professional confidentiality
	observes the legislation pertaining to data security and privacy in his/her assignments	observes the legislation pertaining to data security and privacy at work	observes the legislation pertaining to data security and privacy in all his/her activities

Health, safety and ability to function	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment	works according to the security systems and data security instructions of the working environment
	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger	observes the safety instructions provided for work, incl. data security, and does not put himself/herself or others in danger
	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them	addresses obvious faults and defects he/she detects and informs the employer of them
	works according to the security systems of the working environment	works according to the security systems of the working environment	works according to the security systems of the working environment
	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.	uses safe, sufficiently strenuous and variable working methods ergonomically.

## Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills while working with service support processes in a company or organisation. The work is carried out to an extent that makes it possible to establish that the vocational skills meet the requirements.

A skills demonstration is to comprise in their entirety:

- ◆ mastering the work process
- ◆ mastering the work method, equipment and material
- ◆ underpinning knowledge
- ◆ key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration or a competence test, it is to be completed with such other assessment of competence as interviews, assignments, project work and other methods.

### 4.4.11 Modules from vocational upper secondary qualifications

At least one module from another vocational upper secondary qualification can be included in a Vocational Qualification in Information and Communications Technology.

In the competence-based qualification system, the education provider must have a valid contract for arranging the vocational qualification in question or the education provider can purchase the competence tests from an education provider with such a contract for arranging qualifications. A certificate of a completed vocational qualification module is always issued by the committee in charge of the qualification in question. The qualification committee of Data Processing approves the module in question as a part of the Vocational Qualification in Information and Communications Technology on the basis of the certificate.

### 4.4.12 Module from further vocational qualifications

At least one vocational module from a further vocational qualification can be included in a Vocational Qualification in Information and Communication Technology. The education provider must have a valid contract for arranging the further vocational qualification in question or the education provider can purchase the competence tests from an education provider with such a contract for arranging qualifications.

In vocational upper secondary education and training, a certificate of a completed further vocational qualification module is always issued by the qualification committee in charge of the qualification in question and the education provider accepts the further vocational qualification module into the qualification certificate of the student.

In a competence-based qualification system, a certificate of a completed further vocational qualification module is always issued by the qualification committee in charge of the qualification in question. The qualification committee of Data Processing approves the module in question as a part of the Vocational Qualification in Information and Communications Technology on the basis of the certificate.

#### **4.4.13 Module from specialist vocational qualifications**

At least one vocational module from a specialist vocational qualification can be included in a Vocational Qualification in Information and Communications Technology. The education provider must have a valid contract for arranging the specialist vocational qualification in question or the education provider can purchase the competence tests from an education provider with such a contract for arranging qualifications.

In vocational upper secondary education and training, a certificate for a completed specialist vocational qualification module is always issued by the qualification committee in charge of the qualification in question and the education provider accepts the specialist vocational qualification module into the qualification certificate of the student.

In a competence-based qualification system, a certificate of a completed specialist vocational qualification module is always issued by the qualification committee in charge of the qualification in question. The qualification committee of Data Processing approves the module in question as a part of the Vocational Qualification in Information and Communications Technology on the basis of the certificate.

#### **4.4.14 Module from polytechnic studies**

At least one vocational module from the polytechnic studies can be included in a Vocational Qualification in Information and Communications Technology.

The education provider of the Vocational Qualification in Information and Communications Technology accepts the studies in question into the Vocational Qualification in Information and Communications Technology. Vocational skills demonstrations are required for polytechnic studies.

#### **4.4.15 Locally offered modules**

In its approved curriculum, the education provider offers modules that include vocational skills requirements based on the needs of local and regional working life. The module names must reflect the integrated activities in working life. Skills requirements and assessment criteria must be drawn up for them as well as ways to demonstrate vocational skills in line with Chapter 9.3 in the appendices under “Vocational skills requirements, targets of assessment and general assessment criteria”.

## 4.5 OTHER OPTIONAL MODULES IN VOCATIONAL UPPER SECONDARY EDUCATION AND TRAINING

In its approved curriculum, the education provider offers optional modules, which can be advanced or enhancing optional modules, core subjects or general upper secondary studies. Advanced or enhancing vocational modules may include modules with contents based on needs of local or regional working life, modules from other vocational qualifications as well as competence acquired at work. The modules must have a name and their skills requirements, objectives and assessment criteria listed, as well as the ways of demonstrating the skills described for vocational modules.

As to offering other optional modules, the education provider may work together with working life and other education providers. The student can also choose these modules from modules offered by other education providers.

The scope of core subjects and general upper secondary studies must not exceed 10 credits in optional modules.

### 4.5.1 Entrepreneurship

#### Skills requirements

As part of a team, a student will be able to

- ◆ assess productization opportunities
- ◆ assess the operating opportunities of a planned business
- ◆ specify a financially profitable business idea and develop a mission statement
- ◆ find a working partner company
- ◆ draw up a preliminary business and financial plan
- ◆ present the business and financial plans to business consultants and financiers
- ◆ negotiate on the company's operating opportunities and financing required to set it up
- ◆ set up a business
- ◆ plan and start business operations
- ◆ work in the business and carry out its core tasks
- ◆ work with providers of business support services
- ◆ terminate the business activities on completion of studies or continue them as part of his/her Business Operations studies (10 credits) aiming at setting up a business of his/her own.



## Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. The targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>1. Mastering the work process</b>	Student		
Planning one's own work	contributes to planning business operations and works as a team member	plans business operations and works spontaneously and responsibly as a team member	plans business operations innovatively and works spontaneously, responsibly and supportively as a team member
	assumes responsibility for his/her work as agreed	assumes joint responsibility for the tasks agreed	assumes responsibility for the activities of the whole team for completing the tasks agreed under joint responsibility
Mastering the work entity	proceeds systematically in his/her work under instructions	proceeds systematically and fluently in his/her work	advances systematically and fluently in his/her work adjusting it to the activities of the team
	participates in agreed meetings with the partner networks	acquires partners and acts in partner networks	acquires partners and makes use of partner networks to develop operations
High-quality operations	works in accordance with quality objectives set for his/her work and changes his/her own activities based on given feedback	works in accordance with the quality objectives set together and assesses his/her own activities in reaching them	works in accordance with the quality objectives set together and develops his/her activities to reach them
	works in a service oriented manner.	works in a service oriented manner and promotes customer satisfaction.	works in a service oriented manner and promotes customer satisfaction.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
<b>2. Mastering the work method, equipment and material</b>	<b>Satisfactory 1</b>	<b>Good 2</b>	<b>Excellent 3</b>
	Student		
	uses the most common company tools, such as equipment and machinery, computers and applications	uses company tools, such as equipment and machinery, computers and applications	uses the company tools, such as equipment and machinery, computers and applications independently
	observes the principles of information security.	observes the principles of information security.	observes the principles of information security.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
<b>3. Underpinning knowledge</b>  Assessing productizing and operating opportunities	<b>Satisfactory 1</b>	<b>Good 2</b>	<b>Excellent 3</b>
	Student		
	makes use of the business opportunities in productizing offered by his/or her own field or other fields in cooperation with the team	makes use of the business opportunities in productizing, offered by his/or her own field or other fields in cooperation with the team	makes use of the business opportunities in productizing, offered by his/or her own field or other fields in cooperation with the team
		searches information available in different networks	makes use of information available in different networks
	surveys businesses operating in the field and finds information on acting as an entrepreneur in the field, working under instructions in a team	surveys businesses operating in the field and finds information on acting as an entrepreneur in the field, working in a team	surveys businesses operating in the field and finds information on acting as an entrepreneur in the field, working in a team
	follows development in the field from business point of view, working under instructions in a team	follows development in the field from business point of view working in a team	follows development and outlook in the field from business point of view working in a team
	assesses his/her own possibilities as an entrepreneur, working under guidance in a team	assesses his/her own possibilities as an entrepreneur working in a team	assesses independently his/her possibilities as an entrepreneur and sets personal development objectives

Refining the business plan	finds out about the operating opportunities of the enterprise to be set up, working under guidance in a team	finds out about and reports on the operating opportunities of the enterprise to be set up in cooperation with the team	finds out about and reports on the operating opportunities of the enterprise to be set up in cooperation with the team
	selects form of enterprise and draws up the documents needed for setting up a business, working under instructions in a team	selects form of enterprise and draws up the documents needed for setting up a business, working in a team	selects form of enterprise and draws up the documents needed for setting up a business, working in a team
		takes part in acquiring information from key authorities	acquires information from key authorities independently
Planning business operations and working in the company	takes part in search for information needed when planning operations, e.g. how a product or service is produced and sold and how finances are taken care of, working under instructions in a team	takes part in search for information needed when planning operations, e.g. how a product or service is produced and sold and how finances are taken care of, working in a team	makes use of information needed when planning operations on how a product or service is produced and sold and how finances are taken care of, working in a team
	takes part in search for information needed when planning company logistics working under guidance in a team	takes part in search for information needed when planning company logistics, working in a team	makes use of information needed when planning company logistics, working in a team
	working in a team, acquires information on support services available when setting up a business and running it, e.g. accounting office services	working in a team, acquires information on support services available when setting up a business and running it, e.g. accounting office services	working in a team, acquires information on support services available when setting up a business and running it, e.g. accounting office services
	applies the underpinning knowledge needed to complete agreed tasks, working under instructions	applies the underpinning knowledge needed to run the business	independently applies the underpinning knowledge needed to run the business
	finds out under guidance what legislation requires bookkeeping	finds out what legislation requires bookkeeping	finds out what legislation requires bookkeeping and why
	keeps the receipts and vouchers needed for bookkeeping, working under instructions.	keeps the receipts and vouchers needed for bookkeeping	keeps the receipts and vouchers needed for bookkeeping
		interprets the business's profit and loss account and balance sheet e.g. with the help of an accounting firm.	interprets business's profit and loss account and balance sheet e.g. with the help of an accounting firm.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>4. Key competences for lifelong learning</b>	Student		
Learning and problem solving	acquires under instructions information on key regulations related to products, services and contracts	finds information on key legislation and other statutes concerning products, services and contracts	applies key legislation and other statutes concerning products, services and contracts
Interaction and cooperation	participates in preparing choices and decisions in the team	makes proposals, choices and decisions in the team	makes justified proposals, choices and decisions in the team to develop business operations
	assesses his/her own activities and progress made under guidance	assesses his/her own activities and progress made	assesses his/her own activities and progress made in his/her work and business operations
	participates in cooperation negotiations with team members and stakeholders	negotiates on cooperation with team members and participates in negotiations with stakeholders	negotiates on cooperation with team members and stakeholders
Vocational ethics	observes financial, social and sustainable development related values in business operations under instructions	observes financial, social and sustainable development related values in business operations	observes financial, social and sustainable development related values in business operations
Health, safety and ability to function	follows occupational safety regulations in the field in his/her activities and customer service situations	follows occupational safety regulations in the field in his/her activities and customer service situations	follows occupational safety regulations in the field in his/her activities and customer service situations
	protects him-/herself from work and working environment related dangers under guidance	protects him-/herself from work and working environment related dangers	protects him-/herself from work and working environment related dangers
	ensures his/her own safety and that of the colleagues and customers in familiar situations under guidance.	ensures his/her own safety and that of the colleagues and customers in different situations as instructed.	ensures his/her own safety and that of the colleagues and customers in different situations
			develops the safety of his/her team and ability to work by developing own working practices and environment instructs others to act in a healthy and safe way when working as a team member.

## Ways of demonstrating vocational skills

Student demonstrates his/her vocational skills by working in cooperation with team members, representatives of partner companies, stakeholders or other parties in practice enterprises and the like.

A skills demonstration must cover completely

- ◆ mastering the work processes
- ◆ mastering the work methods, equipment and material
- ◆ underpinning knowledge
- ◆ mastering key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration in full, it is completed with such other assessment of competence as interviews, assignments and other reliable methods.

## 4.5.2 Workplace Instructor Training

### Skills requirements

Student is able to

- ◆ recognise the tasks at the workplace suited to on-the-job learning or skills demonstrations and finds out about their targets of assessment and assessment criteria
- ◆ negotiate on implementation of on-the-job learning and skills demonstrations in the work community
- ◆ prepare on-the-job learning and skills demonstration plans in cooperation with the teacher and workplace instructor
- ◆ instruct other students on the working tasks, customs and rules at the workplace or at school
- ◆ present the training and working opportunities in the field e.g. to students in an introductory period
- ◆ have guidance discussions, develop own activities based on feedback and arbitrate differences of opinion
- ◆ work with different learners and colleagues
- ◆ receive and give constructive feedback
- ◆ self-assess on-the-job learning and skills demonstration in accordance with the targets of assessment and assessment criteria agreed earlier

- ♦ assess occupational safety risks in his/her work and know how to act and also instruct others to act in accordance with the occupational safety instructions.

## Assessment

The table comprises the targets of assessment and assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
1. Mastering the work process	Satisfactory 1	Good 2	Excellent 3
	Student		
Planning one's own work and drawing up plans	prepares on-the-job learning and skills demonstration plans under instructions	prepares on-the-job learning and skills demonstration plans as instructed	prepares on-the-job learning and skills demonstration plans independently and proactively
Mastering the work entity	needs instructions at times.	completes given tasks independently.	proceeds fluently in his/her work adjusting it to the activities of the working environment.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	Student		
Guiding a student	guides other students under instructions	guides other students as instructed and holds guidance discussions	instructs other students, acts flexibly with different people and arbitrates differences of opinion
Assessing a student	accepts and gives feedback on a tasks under instructions as well as, under instructions, self-assesses on-the-job learning and skills demonstrations based on targets of assessment and assessment criteria agreed beforehand.	accepts and gives feedback on a task as well as self-assesses on-the-job learning and skills demonstrations based on targets of assessment and assessment criteria agreed beforehand.	holds constructive feedback discussions and self-assesses on-the-job learning and skills demonstrations based on targets of assessment and assessment criteria agreed beforehand.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
3. Underpinning knowledge	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowledge of working life and training opportunities in one's own field	presents some of the working and training opportunities in the field	presents working and training opportunities in the field	presents independently and variedly working and training opportunities in the field
Knowledge of curricula	recognises, under instructions, the subject matter to be learnt during on-the-job learning and the competence to be assessed in skills demonstration.	recognizes, as instructed, the subject matter to be learnt during on-the-job learning and the competence to be assessed in skills demonstration.	recognizes independently the subject matter to be learnt during on-the-job learning and the competence to be assessed in skills demonstration.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
	Student		
Health, safety and ability to function	assesses occupational safety risks involved and follows the occupational safety instructions given.	assesses occupational safety risks involved and follows the occupational safety instructions given.	assesses occupational safety risks involved, follows and also instructs others to follow the occupational safety instructions given.

### Ways of demonstrating vocational skills

Student demonstrates his/her vocational skills by preparing an on-the-job learning or skills demonstration plan. He/She studies the activities, tasks, working culture and rules of the work community and assesses the occupational safety risks and ergonomics issues involved from his/her own work point of view. Student examines the opportunities of arranging his/her on-the-job learning and skills demonstration assessments at the workplace.

The skills demonstration is mainly given in connection with another skills demonstration.

A skills demonstration is to comprise at least

- ◆ mastering the work process
- ◆ mastering the work methods, equipment and materials: the guidance of the student, the assessment of learning and competence
- ◆ underpinning knowledge: the knowledge of the requirements of vocational qualifications
- ◆ mastering the key competences for lifelong learning: health, safety and ability to function.

If the vocational skills required in the module cannot be shown in a skills demonstration in full, it is completed with such other assessment of competence as interviews, assignments and other reliable methods.

### 4.5.3 In-depth and enhancing vocational modules

In its approved curriculum, the education provider offers advanced or enhancing vocational modules the contents of which are based on the needs of local or regional working life. The module names must reflect the integrated activities in working life and their skills requirements, objectives and assessment criteria must be drawn up as well as the ways of demonstrating the skills in line with what is said in Chapter 9.3 in the appendices under “Vocational skills requirements, targets of assessment and general assessment criteria”. As to offering other optional modules, the education provider can work together with working life and other education providers.

### 4.5.4 Core subjects

In its curriculum, the education provider offers core subjects which increase the student’s opportunities of choosing core subjects listed in Chapter 5. The modules can be optional supplements to the compulsory ones (see the qualification requirements Chapter 5.2.1). The education provider determines the objectives, core contents and assessment for these modules. The modules may also be optional modules from core subjects presented in the qualification requirements in Chapters 5.2.2–5.2.7. The education provider may also offer them in cooperation with other education providers. The student can also choose these studies from modules offered by other education providers.

### 4.5.5 General upper secondary studies

In its curriculum, the education provider offers a student an opportunity to include in his/her qualification general upper secondary studies arranged by general upper secondary schools in accordance with the general upper secondary school curriculum and for which the general upper secondary school awards a certificate. The education provider may also offer them in cooperation with other education providers. The education provider can also decide that a student can choose general upper secondary studies (e.g. e-learning) from the spectrum offered by different general upper secondary education providers.



## 4.6 **MODULES PROVIDING INDIVIDUAL IN-DEPTH VOCATIONAL COMPETENCE (MODULES THAT EXPAND THE SCOPE OF A VOCATIONAL UPPER SECONDARY QUALIFICATION)**

The student or candidate may individually include in his/her vocational upper secondary qualification more modules, when it is necessary from the point of view of field-specific or local skills requirements or strengthening the vocational skills of the candidate. Modules providing advanced individual vocational competence should be implemented as widely as possible in workplaces with working life.

### 4.6.1 **Business Operations**

#### **Skills requirements**

The student or candidate is able to

- ◆ assess the possibilities of productization of his/her own competence (product or service)
- ◆ study the business operations environment of the company to be established
- ◆ identify and acquire cooperation businesses and partners
- ◆ find, recognise and assess the company's operating potential
- ◆ select a financially profitable business idea and develop a mission statement
- ◆ draw up a business plan for the enterprise
- ◆ make a management plan for the company's accounts and finance and find out about the resources required to run it
- ◆ present the business and financial plans to business consultants and financiers
- ◆ negotiate on company's operating potential and financing
- ◆ plan the manufacturing of the company's products and provision of its services
- ◆ prepare a marketing plan and report on it as well as decide on marketing activities
- ◆ make the logistics decisions needed
- ◆ prepare a company risk analysis
- ◆ plan the implementation and key tasks of profitable business operations
- ◆ select the form of enterprise, establish a business and close it down.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training, the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
1. Mastering the work process	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Planning one's own work and drawing up plans	plans business operations under guidance	plans the operations of his/her enterprise and acts independently and responsibly	plans the operations of his/her enterprise innovatively and acts independently, responsibly and supportively
Managing the work entity	proceeds systematically in his/her work under guidance	proceeds systematically and fluently in his/her work	proceeds systematically and fluently in his/her work
	acquires a partner company under guidance	acquires partners and acts in partner networks	acquires partners, makes use of partner networks to develop operations
High-quality operations	works in accordance with quality objectives set for his/her work and changes own activities based on given feedback	acts in accordance with quality objectives set and assesses own activities in reaching them	acts in accordance with quality objectives set and develops own activities to reach them
	works in a service oriented manner.	works in a service oriented manner and promotes customer satisfaction.	works in a service oriented manner and promotes customer satisfaction.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
2. Mastering the work method, equipment and material	Satisfactory 1	Good 2	Excellent 3
	The student or candidate		
Technology and information technology	uses customary tools such as equipment and machinery, computer and software needed when setting up his/her business	uses tools such as equipment and machinery, computer and software needed when setting up his/her business	uses independently tools such as equipment and machinery, computer and software needed when setting up his/her business
	acts in accordance with the principles of information security.	acts in accordance with the principles of information security.	acts in accordance with the principles of information security.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
<b>3. Underpinning knowledge</b>	The student or candidate		
Assessment of productization opportunities	makes use, under guidance, of the business opportunities in productization	makes use of the business opportunities in productization	makes use of the business opportunities in productization
	searches information available in different networks under guidance	searches information available in different networks	makes use of information available in different networks
	identifies companies operating in the field and finds information on acting as an entrepreneur in the field under instructions	identifies companies operating in the field and finds information on acting as an entrepreneur in the field	identifies companies operating in the field and finds information on acting as an entrepreneur in the field
Looking into the business environment	follows, under instructions, development in the field from the point of view of starting business operations	follows development in the field from the point of view of starting business operations	follows development and outlook in the field from the point of view of starting business operations
	assesses his/her chances as an entrepreneur under guidance	assesses his/her chances as an entrepreneur	assesses independently his/her chances as an entrepreneur and sets personal development objectives
Choosing business idea	finds out about the business opportunities of the enterprise to be established under guidance	finds out about and reports on the business opportunities of the enterprise to be established	finds out about and reports on the business opportunities of the enterprise to be established
	acquires information from key authorities under instructions	acquires information from key authorities	acquires information from key authorities independently
	acquires under instructions information needed in planning business operations like how a product is made or service provided, sold and how accounting and finances are taken care of	acquires information needed in planning his/her business operations like how a product is made or service provided, sold and how accounting and finances are taken care of	makes use of information needed in planning his/her business operations like how a product is made or service provided, sold and how accounting and finances are taken care of

Drawing up a business plan	acquires under instructions information needed in planning company logistics	acquires information needed in planning company logistics	makes use of information needed in planning company logistics
	uses under instructions information needed in company risk analysis	uses information needed in company risk analysis	applies information needed in company risk analysis
	acquires under instructions information on support services available when setting up a business and running it, e.g. accounting office services	acquires information on support services available when setting up a business and running it, e.g. accounting office services	acquires information on support services available when setting up a business and running it, e.g. accounting office services
	acquires under instructions information on the entrepreneur's role in book-keeping and profit and loss analysis	acquires information on the entrepreneur's role in book-keeping and profit and loss analysis	acquires information on the entrepreneur's role in book-keeping and analysing the profit and loss account and balance sheet
	acquires under instructions information on key statutes related to products, services and contracts	acquires information on key legislation and statutes concerning products, services and contracts	applies key legislation and other statutes concerning products, services and contracts
Choosing form of enterprise, setting it up and closing it down	chooses under instructions form of enterprise and draws up the documents needed when setting up and closing down a business.	chooses form of enterprise and draws up the documents needed when setting up and closing down a business.	chooses form of enterprise and draws up the documents needed when setting up and closing down a business.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
4. Key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Learning and problem solving	<p>makes decisions under instructions</p> <p>assesses his/her own activities and progress made under guidance</p>	<p>makes choices and decisions</p> <p>assesses his/her own activities and progress made</p>	<p>makes valid proposals, choices and decisions to develop company operations</p> <p>assesses his/her own activities independently and progress in his/her work and company operations</p>
Interaction and cooperation	negotiates under guidance on cooperation with stakeholders	negotiates on cooperation with stakeholders	negotiates innovatively on cooperation with stakeholders
Vocational ethics	observes under instructions the financial, social and sustainable development values agreed when planning business operations	observes the financial, social and sustainable development values agreed when planning business operations	observes the financial, social and sustainable development values when planning business operations

Health, safety and ability to function	prepares under instructions plans on observance of occupational safety regulations in his/her business	prepares plans on observance of occupational safety regulations in his/her business	prepares independently plans on observance of occupational safety regulations in his/her business
	prepares under instructions plans on how to protect oneself against work and working environment related dangers.	prepares plans on how to protect oneself against dangers related to the work done and the working environment.	prepares spontaneously plans on how to prepare against dangers related to the work done and the working environment.

## Ways of demonstrating vocational skills

The student or candidate demonstrates his/her vocational skills by planning the operations of his/her own enterprise and acting in cooperation with different stakeholders.

Skills demonstration is to cover completely

- ◆ mastering the work processes
- ◆ mastering the work method, equipment and material
- ◆ underpinning knowledge
- ◆ key competences for lifelong learning.

If the vocational skills required in the module cannot be shown in a skills demonstration or competence test in full, it is to be completed with such other assessment of competence as interviews, assignments and other reliable methods.

## 4.6.2 Modules from vocational qualifications (vocational upper secondary qualifications, further vocational qualifications and specialist vocational qualifications)

### 1. Modules from vocational upper secondary qualifications

Modules from vocational upper secondary qualifications can be included in the Vocational Qualification in Information and Communications Technology, in accordance with the student's or candidate's individual study plan.

In the competence-based qualification system, a certificate of a completed upper secondary module is always awarded by the committee in charge of the upper secondary qualification concerned. The Qualification Committee responsible for the specialisation of the qualification concerned accepts the module in question as part of the Vocational Qualification in Information and Communications Technology based on the certificate.

## 2. Modules from further vocational qualifications

Modules from further vocational qualifications can be included in the Vocational Qualification in Information and Communications Technology, in accordance with the student's or candidate's individual study plan.

The education provider must have a valid contract for arranging competence based qualification in question or the education provider can buy the competence tests from an education provider with a contract.

In vocational upper secondary education, a certificate of a completed further vocational qualification module is always awarded by the committee in charge of the further vocational qualification concerned and education provider accepts the module into student's qualification certificate.

In the competence-based qualification system, a certificate of a completed further vocational qualification module is always awarded by the Qualification Committee in charge of the further vocational qualification concerned and the Qualification Committee of Data Processing accepts the module in question as part of the Vocational Qualification in Information and Communications Technology based on the certificate.

## 3. Modules from specialist vocational qualifications

Modules from specialist vocational qualifications can be included in the Vocational Qualification in Information and Communications Technology, in accordance with the student's or candidate's individual study plan.

The education provider must have a valid contract for arranging competence based qualification in question or the education provider can buy the competence tests from an education provider with a contract.

In vocational upper secondary education, a certificate of a completed specialist vocational qualification module is always awarded by the Qualification Committee of the specialist vocational qualification concerned and education provider accepts the module into student's qualification certificate.

In the competence-based qualification system, a certificate of the completed module of specialist vocational qualification is always awarded by the committee in charge of the specialist vocational qualification concerned and the Qualification Committee of Data Processing accepts the module of specialist vocational qualification in question as part of the Vocational Qualification in Information and Communications Technology based on the certificate.

### **4.6.3 Locally offered modules providing in-depth vocational competence in curriculum-based vocational education and training**

The education provider can provide in its approved curriculum the student with a chance to take individually vocational in-depth modules that correspond with local or regional working life skills requirements together with the student's need for deeper vocational skills. The modules must be named and their skills requirements, assessment criteria and ways of demonstrating vocational skills must be determined.

## **4.7 FINAL PROJECT IN CURRICULUM-BASED VOCATIONAL EDUCATION AND TRAINING**

The student will plan and complete a Final Project that will demonstrate his/her competence. It can be, for example, a product, demonstration of skill, portfolio or performance. The student recognises his/her vocational key strengths and develops his/her creativity, innovativeness and promotes personal professional growth while completing the Final Project. He/she presents and assesses his/her Final Project as well as its planning process and realisation. With the Final Project, the student promotes his/her own employment. With the Final Project, the student promotes his/her own employment.

The education provider decides how the Final Project is carried out.

# 5

## THE OBJECTIVES AND ASSESSMENT OF CORE SUBJECTS IN VOCATIONAL CURRICULUM-BASED EDUCATION AND TRAINING, 20 CREDITS

### 5.1 COMPULSORY MODULES

#### 5.1.1 Mother tongue, 4 credits

##### 5.1.1.1 MOTHER TONGUE, FINNISH

#### Objectives

Student

- ◆ communicates and acts in interactive situations so that he/she can practice the profession, contribute to working life, be an active citizen and pursue further studies
- ◆ possesses the text skills needed in working life
- ◆ knows how to act in a multicultural and lingual environment
- ◆ understands the key concepts, relevant contents as well as the meaning of documents related to information and communications technology, such as user instructions and project documents
- ◆ acquires information from different sources in different ways and conveys it in speech and in writing
- ◆ interprets different text types and fiction
- ◆ assesses his/her skills in the mother tongue and develops them continuously
- ◆ knows how to act in different interactive situations, such as customer service situations where service support is provided and teamwork situations of projects
- ◆ masters different oral communication situations related to information and communications technology, such as guidance related to the deployment of new software or hardware or the presentation of outcomes at different stages of a project
- ◆ knows how to draw up the most common written work required by his/her profession and community
- ◆ knows how to behave in a job hunting situation and how to draw up job application documents



- ◆ makes use of trade journals concerning information and communications technology as well as other media
- ◆ is critical in his/her use of media and knows the principles of the use of sources
- ◆ develops his/her communication and interaction skills and contributes to the development of communication at work.

## Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	acquires information essential to his/her vocational field from clear texts under instruction	acquires information related to his/her vocational field from different sources and uses reliable texts	acquires information from different sources and from even difficult texts and assesses their reliability
Comprehension of texts	understands the core meaning of the text from vocation point of view and knows how to combine its information to his/her own experiences and knowledge	understands the meaning and main contents of the text and also knows how to combine and compare its details to his/her own experiences and knowledge	understands both the meaning and message of the text as well as the meaning of the details, draws conclusions and evaluates the contents and the way of expression used in the text
Written communications	writes under instruction texts that are vital to vocational skills	writes texts that are vital to one's vocational skills	writes target oriented and processes his/her texts based his/her own evaluation and feedback
	knows the basics of spelling	uses fluent phrase and sentence structure and breaks text into paragraphs	masters the basic norms of language use and also improves the wording and layout of the written text
	compiles documents under guidance following a model	draws up appropriate documents	draws up appropriate documents and knows how to use document templates
	observes the requirements of the text type following a model	observes the requirements of the text and uses his/her knowledge of other text types	applies text type requirements in his/her own texts

Interaction and acting in working life language situations	acts appropriately in interactive situations, like when applying for a job	acts appropriately and politely in interactive situations, like when applying for a job	is customer-orientated, flexible and convincing in different interactive situations
	participates in conversation making statements	participates in a conversation and takes it forward towards the target	participates in the conversation in an active and constructive way and is partly responsible for the communication atmosphere
	validates his/her own opinions	gives a variety of grounds for his/her opinions and claims	gives a variety of grounds for his/her own views and also assesses the points made
	knows how to give a short presentation	creates contact to his/her listeners as he/she speaks and knows how to construct his/her statement in a way that it is easy to follow	can maintain interaction while speaking, knows how to exemplify his/her presentation and how to construct its contents logically
Media competence	knows the central media in the vocational field	uses key communication tools and assesses media texts	makes versatile use of communication tools and assesses media texts critically
	observes copyrights under guidance	sees copyrights as rights and obligations and observes them by citing his/her sources	knows how to cite the sources used and asks permission to use them if necessary
Knowledge of language and culture	recognizes the meaning of his/her own language and the meaning of cross-cultural communication	takes into account the cross-cultural communication in his/her own interactive situations	applies cross-cultural communications and his/her own cultural skills and acts liberally
	uses literature and other art forms to acquire experiences.	knows how to construe literature and other art forms.	knows how to analyze and interpret literature and other art forms.

**Key competences for lifelong learning:** 1. Learning and problem solving, 2. Interaction and cooperation, 7. Aesthetics, 8. Communications and media skills, 10. Technology and information technology, 11. Active citizenship and different cultures

In validation of prior learning general upper secondary school courses *Language, texts and interaction* (ÄIS1), *Structures and meanings of texts* (ÄIS2) *Means of influence* (ÄIS4) and one of the following *Literary texts* (ÄIS3), *Text, style and context* (ÄIS5), *Language, literature and identity* (ÄIS6) or *Oral communication* (ÄIS7) compensate for *Mother tongue, Finnish studies* in core subjects.

### 5.1.1.2 MOTHER TONGUE, SWEDISH

In education and training provided in Swedish, the objectives and assessment criteria for mother tongue studies are the same as when the studies are in Finnish.

### 5.1.1.3 MOTHER TONGUE, SAAMI

#### **Objectives**

Student

- ◆ acquires versatile verbal and written experiences in Saami
- ◆ understands his/her lingual roots and the development of his/her own lingual identity
- ◆ recognizes the meaning of language and culture to the work community
- ◆ familiarizes him/herself with the Saami story telling tradition and its meaning to the Saami language and culture
- ◆ acquires information from different Saami language sources and also passes it on both in speech and in writing
- ◆ expands his/her experiential and work environment to include other Saami language professionals in the same vocational field who live in the Nordic countries and in Russia
- ◆ understands the meaning of multiculturalism and multilingualism and also develops his/her linguistic and cultural tolerance
- ◆ draws up the most common vocational written work in Saami
- ◆ writes a report and job application documents in Saami
- ◆ knows how to act when applying for a job and in other oral communication situations in the ICT industry
- ◆ knows how to act in Saami in diverse interactive situations, such as customer service situations where service support is provided and teamwork situations during a project
- ◆ knows how to communicate and interact in Saami so that he/she can participate in working life, be an active citizen and pursue further studies
- ◆ evaluates his/her own mother tongue skills.

## Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowledge of language and culture	knows the basic features of Saami culture	knows the background of national Saami language and culture formation	strengthens and develops his/her own lingual identity
	uses Saami story telling tradition under instruction	know Saami culture and familiarises himself/herself with its unique character, e.g. story telling tradition	uses Saami story telling tradition and knows the history of Saami people through it
	recognizes the variety and significance of languages and cultures	takes into account the meaning of different cultures and languages in communication situations in his/activities	recognizes the common roots of Saami and Finnish languages
Acquiring information and media competence	makes use of professional papers and other media in the field under instruction	uses the key communication tools in the field	acquires and analyses enriching experiences by making use of the various communications tools
	knows the key media used in the vocational field	recognizes the different influences of the media and evaluates them	makes versatile use of the key media contents in the field and interprets them objectively
Understanding texts	understands the core of the Saami language text and knows how to combine its information with his/her own experiences and knowledge	understands the meaning of the text and its core content in Saami language and knows how to combine and compare its details to his/her own experiences and knowledge	understands the meaning of the text as well as the meaning of its message, draws conclusions and evaluates the content and the way the text is written

Written communication	knows the basics of Saami language spelling	uses fluent phrase and sentence structure and breaks the text into paragraphs	plans his/her writing according to the objective and also improves his/her text according based on his/her own assessment as well as that of the others
	writes in full sentences and uses information technology	compiles a text that is valid in contents and layout and matches the title and the meaning of the text	compiles a text, that is both diverse in contents and fluent and coherent in structure
		communicates in writing according to the situation	compiles written documents for use in the vocational field as well as the community
Interaction and acting in working life language situations	acts correctly in interactive situations	acts correctly and politely in interactive situations	acts flexibly and convincingly in interactive situations
	participates in conversation making statements	participates in the conversation and directs the it towards desired end result	participates in the conversation in an active and constructive way
	gives a short presentation.	creates contact with his/her listeners when speaking and knows how to construct his/her speech in a way that it is easy to follow.	maintains interaction while speaking, knows how to exemplify his/her presentation and how to construct its contents logically.

**Key competences for lifelong learning:** 2. Interaction and cooperation, 8. Communications and media skills, 11. Active citizenship and different cultures.

In validation of prior learning general upper secondary school courses *Language, texts and interaction* (ÄIS1), *Structures and meanings of texts* (ÄIS2) *Means of influence* (ÄIS4) and one of the following *Literary texts* (ÄIS3), *Text, style and context* (ÄIS5), *Language, literature and identity* (ÄIS6) or *Oral communication* (ÄIS7) compensate for *Mother tongue, Saami studies* in core subjects.

### 5.1.1.4 MOTHER TONGUE, SIGN LANGUAGE

#### Objectives

Student

- ◆ knows how to practice the skills related to the ICT industry using sign language
- ◆ appreciates sign language skills as a part of his/her identity
- ◆ works in interactive situations that use sign language as well as situations where spoken and written language are used
- ◆ knows how to communicate and interact in sign language in working life, as an active citizen and a further education student
- ◆ knows how to communicate in a way that makes social interaction, learning and working life success possible.

#### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowledge of language and culture	understands the stature of sign language community in multilingual Finnish society	compares the communication used by signed and spoken language cultures	knows the background of the sign language community and knows how to represent the minority culture in the prevailing multilingual culture
	recognizes the core characteristics of signed and spoken language	makes use of the characteristics of signed and spoken languages	strengthens and develops his/her own lingual identity and the vocational field signs

Knowledge of sign language linguistics	knows the core structure of the sign language	lists basic features in his/her mother tongue and analyses his/her own language use in relation to others	masters the basic structure of sign language
	uses sign language dictionaries under instruction	uses sign language dictionaries independently	searches for diverse information in sign language dictionaries and textbooks
	recognizes the different forms of sign language (general and spoken language situations)	ponders the objective contents of sign language texts	knows the linguistic characteristics of sign language
Interaction and acting in working life language situations	uses vocation related signs under instruction	knows general set of signs and vocation related sign set	knows vocation related sign set well and the linguistic features related to professional identity
	acts correctly in interactive situations	participates in the conversation and directs the it towards desired end result	uses sign language that is structurally fluent and rich in expression
	reads signed (videoed) texts	explains professional things in sign language in presentations and in instructions prepared for others	reads texts written in sign language objectively and utilises the newly acquired information
	produces and understands sign language	produces short presentations in sign language and uses sign language in conversations	maintains interaction while speaking and produces presentations in sign language, in which he/she makes use of the ways of expression and presentation ways used in the sign language culture
	gives a short presentation in sign language	acts in different environments with people, who use sign language and with those who can hear	
Use of learning skills and means of help	knows how to use a sign language interpreter in one-on-one conversations	knows how and when to use an interpreter	knows how to use a sign language interpreter fluently in various situations
	uses the professional literature and work manuals with the help of sign language under instruction	uses information search fluently and searches information independently from different sources	interprets the information gathered from different points of view and forwards it using sign language
	uses memory techniques in work assignments under instruction	uses different learning strategies in sign language studies	utilises different learning strategies in his/her sign language studies
	masters the basics of communication technology and information search skills.	produces simple presentations with communication tools.	uses communication tools variedly when producing presentations in sign language.

**Key competences for lifelong learning:** 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communication and media skills.

In validation of prior learning general upper secondary school courses *Language, texts and interaction* (ÄIV1), *Structures and meanings of texts* (ÄIV2), *Texts and influence* (ÄIV4), and one of the following *Devices and influence of literature* (ÄIV3), *Text, style and context* (ÄIV5), *Language, literature and identity* (ÄIV6) or *Advanced Oral communication* (ÄIV7) compensate for *Mother tongue, Sign language* studies in core subjects.

### 5.1.1.5 MOTHER TONGUE, ONE'S OWN MOTHER TONGUE FOR FOREIGN LANGUAGE USERS

#### Objectives

Student

- ◆ reads, writes and expresses him/herself in his/her mother tongue
- ◆ understands his/her linguistic roots and the development of his/her own linguistic identity
- ◆ uses his/her own language and the Finnish language in different contexts
- ◆ acquires information in various ways from different sources and also passes it on orally and in writing
- ◆ knows how to communicate and interact through language so that he/she can participate in working life, be an active citizen and pursue further studies
- ◆ knows how to act in a multicultural society and in professional contexts in the ICT industry while appreciating his/her own language and Finnish traditions.

#### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.



TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowledge of language and culture	perceives the writing methods of his/her own language	reads and writes short texts in his/her own language	reads variable texts in his/her own language and writes text for different purposes
	knows how to tell about main characteristics of his/her language environment and culture	pursues practical studies into the literature his/her own language and cultural circle	knows the structure and grammar of his/her own mother tongue
	can name the cultural roots of his/her language	knows the cultural roots of his/her own language and its family of languages	achieves strong cultural identity and preserves cultural bindings in the environment he/she has grown up in
		knows the ways of use of his/her mother tongue and its varieties in his/her region	is interested in his/her mother tongue and language background and is motivated to develop his/her mother tongue skills
Acquiring information and media skills	knows the most important communication channels of his/her own language	acquires information in his/her own mother tongue utilising different communication tools (for example dictionaries, data networks)	acquires information in his/her own mother tongue utilising different communication tools and compares different sources objectively
Interaction and acting in working life language situations	knows how to give a short presentation in his/her mother tongue	knows how to communicate coherently in his/her own mother tongue in professional matters	compiles different texts observing the communication traditions of his/her own culture and uses oral skills actively
	knows the forms of oral expressions in his/her own and in Finnish culture	compares the use of his/her own language and Finnish	compares the communication of people who speak the same language and Finnish speaking people
	expresses himself/herself orally in the most common language situations in his/her cultural circle.	uses the key terms of his/her own vocational field and participates in conversations in his/her own language region	knows how to act in a similar profession in his/her own culture
		understands the meaning of bilingualism to his/her own work.	expands his/her vocational vocabulary and develops his/her vocational skills in his/her own language if needed.

**Key competences for lifelong learning:** 2. Interaction and cooperation, 8. Communication and media skills, 10. Technology and information technology, 11. Active citizenship and different cultures

In validation of prior learning general upper secondary school courses One's own mother tongue and its use *Language, texts and interaction* (ÄIM1) and *Culture in the language area* (ÄIM3), *Communication and society* (ÄIM4), *World of information* (ÄIM6) compensate for *Mother tongue, one's own mother tongue for foreign language students* studies in core subjects.

### 5.1.1.6 MOTHER TONGUE, FINNISH AS A SECOND LANGUAGE

#### Objectives

Student

- ◆ possesses such communication and interaction skills that he/she has adequate resources for working life, active citizenship and further studies
- ◆ understands the key contents of oral communication in Finnish, easily follows the topic that is being studied and is able to participate in the work
- ◆ understands the key contents of written study material and is able to use it to progress in his/her studies
- ◆ receives inspiration and experiences when studying literature and different text types in Finnish and, if possible, in his/her mother tongue
- ◆ produces documents related to the ICT industry, such as project plans and user instructions
- ◆ masters the key structures of the Finnish language as well as the technical terminology of the ICT industry and the commonly used abbreviations
- ◆ knows how to act in his/her profession while observing the main practices of Finnish working life and society
- ◆ searches for information from different sources, uses dictionaries and makes notes independently in addition to using material from literary and information network sources in order to develop his/her language skills and further his/her studies.

#### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	acquires information essential to his/her vocational field from clear texts under instruction	acquires information related to his/her vocational field from different sources and uses reliable texts	acquires information from different sources, even difficult texts, and assesses their reliability
Comprehension of texts	understands short practical texts, key words and important details and also texts, whose contents are professionally relevant	understands professional texts on his/her own field or on general topics and also texts that need little more inference, knows how to search and combine information from several different texts a few pages long	also understands texts independently on abstract topics that can be related to his/her own field of work and occupational safety, quickly perceives the contents and importance of the text and applies it to different assignments
Written communication	writes short structured text on familiar topics in most common written communication contexts and also possesses the vocabulary and structures needed to create general and professional texts	writes texts on familiar abstract as well as vocational field related topics, uses vocabulary and sentence structures that are needed for variable writing and also writes understandable and practically flawless language	writes fluent and detailed texts also on abstract topics and work assignments, combines or summarises information from different sources to his/her text, commands a vast vocabulary and demanding sentence structures and has the language skills to write fluent structured text
Interaction and acting in working life language situations	understands a speech on studying or his/her vocational field and a conversation containing general vocabulary	understands conversations that cover general topics and factual matters or are related to his/her vocational field and masters the vocabulary	understands concrete and abstract spoken language also when it is related to his/her vocational field, recognises different styles of speech and knows how to summarize key elements and important details from what he/she has heard
	speaks about familiar things and manages unofficial conversations and also communicates in different vocational situations	speaks about ordinary concrete topics and explains matters related to his/her work and also communicates using an vast vocabulary , variable structures and complicated sentences	communicates clearly in situations related to his/her experience and vocational field as well as in most practical and social situations and formal conversations, uses language structures and a fairly extensive vocabulary

Knowledge of language and culture	knows about Finnish society and culture and understands the importance of cross-cultural communication	understands the norms of Finnish society and the procedures of working life and also takes into account the cross-cultural communication in his/her interaction	applies the information on Finnish social norms and working life procedures and also applies cross-cultural communication and his/her own cultural skills
Language studies	knows different ways of studying languages and the principles of using dictionaries and other information sources.	applies different ways of studying languages and uses dictionaries and other information sources to facilitate understanding.	applies different language studying strategies in his/her studies and also uses dictionaries and other information sources to complete assignments.

**Key competences for lifelong learning:** 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communications and media skills, 11. Active citizenship and different cultures.

When defining the objectives of Finnish studies, the description scale of the common European framework of reference for languages: learning, teaching and assessment is applied, level B2.1 of which (basic level of independent language skills) describes in the main a student’s excellent skills at the end of the studies. (Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Published by arrangement with the Council of Europe 2001. European framework. Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Translated into Finnish by Irma Huttunen and Hanna Jaakkola 2003.)

In validation of prior learning general upper secondary school courses *Mastering the basics* (S21), *Putting language into action* (S22), *Advanced textual skills* (S24) and *Getting to know Finnish culture* (S25) compensate for *Mother tongue, Finnish as a second language* in core subjects.

### 5.1.1.7 MOTHER TONGUE, SWEDISH AS A SECOND LANGUAGE

In education and training provided in Swedish the objectives and assessment criteria for *Mother tongue, Swedish as a second language* are the same as when the studies are in Finnish for *Mother tongue, Finnish as a second language*.

## 5.1.1.8 MOTHER TONGUE, FINNISH OR SWEDISH FOR SIGN LANGUAGE USERS

### Objectives

Student

- ◆ acquires and passes on information according to his/her individual starting points and communicates in Finnish or Swedish in different situations
- ◆ is able to consider the connection with working life requirements and the culture and history of the deaf in the texts used
- ◆ produces texts required in tasks in the ICT industry
- ◆ uses professional Finnish appropriate for the ICT industry as well as his/her other linguistic capabilities when working in cooperation with people who can hear
- ◆ compares the forms of expression and grammar of sign language and spoken or written language
- ◆ knows how to work actively in ICT tasks in communities where Finnish/Swedish and/or sign language is used.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	acquires information in Finnish or Swedish under guidance	uses Finnish or Swedish in information gathering in his/her professional field	acquires information independently from written and digital sources and assesses them objectively
Comprehension of text	understands the key contents of a general or professional text	understands the contents and style of a general text and compares literary, general and colloquial texts	understands without difficulty both general and professionally oriented written texts

Written communication	writes about general topics and uses understandable language	compiles short written abstract from a general text	writes fluently understandable, articulate and precise general language and also masters spelling and punctuation rules
	draws up appropriate job applications under instruction and following an example	draws up appropriate job applications	draws up appropriate job applications identifying the applicant's skills
	writes general language so he/she copes with familiar communication situations	makes an understandable input in written communication	conveys and explains written texts in sign language comments on texts and information sources objectively
Interaction and acting in working life language situations	reads professional, cultural and private life text examples	reacts appropriately to different messages and asks for more information when needed	conveys orders and messages and is able to complete assignments in Finnish or Swedish
	acts cooperatively at work using helpful tools if needed	works cooperatively as a member of a team and knows how to convey messages	works in a team and communicates professionally and responsibly with people who can hear as well as the deaf
Media skills	recognizes and observes the changing media environment	observes and assesses objectively the contents and ways of expression used in the media	uses glossaries and electronic databases flexibly to understand text
Knowing the grammar features of sign language and spoken language	knows the key differences of sign language and written language.	compares the typical spoken language structures to those in sign language.	knows the principles and form of spoken Finnish or Swedish and compares them to the ones in sign language.

**Key competences for lifelong learning:** 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communication and media skills.

In validation of prior learning general upper secondary school courses *Language, texts and interaction* (V21), *Text structures and meanings* (V22), *Texts and making an impact* (V24) and one of the following: *Means and interpretation of literature* (V23), *Text, style and context* (V25), *Language, literature and identity* (V26) or *In-depth course in oral communication* compensate for *Mother tongue, Finnish for sign language users* studies in core subjects.

### 5.1.1.9 MOTHER TONGUE, ROMANY

#### Objectives

Student

- ◆ uses the Romany language and cultural heritage as a tool for interaction and thinking in the Romany community and in professional contexts
- ◆ acquires information from different Romany language sources
- ◆ masters such communication and interaction skills that he/she can participate in working life, be an active citizen and pursue further studies
- ◆ acts in different interactive situations in the ICT industry in Romany
- ◆ masters spoken communication situations in the ICT industry
- ◆ masters the key structures of the Romany language as well as the technical terminology and abbreviations of the ICT industry.

#### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowledge of language and culture	knows the key features of Romany culture and analyses his/her own language use compared to others	knows the background and culture of the national Romany language and also strengthens and develops his/her own lingual identity	understands for his/her own part the meaning of lingual identity and acts according to the Romany culture
Acquiring information	searches for information from clear Romany texts under guidance	searches for many kinds of information from clear Romany texts	masters the sources and materials that exist in Romany language and uses them in his/her writing
Comprehension of texts	understands the essence of a Romany text and knows how to combine its information with his/her own experiences and knowledge	understands the main idea of a Romany factual text and writes different kinds of texts in Romany	understands both the meaning and message of the text, draws conclusions and assesses the content and the way of expression

Interaction and acting in working life language situations	participates understandably in written and oral communication at work	communicates in Romany orally and literally according to the situation	communicates in Romany in speech and in writing according to the situation and develops his/her skills based on feedback
		reacts appropriately to different messages and asks for more information when needed	manages him-/herself naturally in different situations in Romany
Knowledge of Romany linguistics	has a sufficient vocabulary on familiar things in Romany.	is quite confident in his/her use of language forms in both oral and written communication.	uses fluent Romany clause and sentence structure.

**Key competences for lifelong learning:** 1. Learning and problem solving, 2. Interaction and cooperation, 11. Active citizenship and different cultures.

In validation of prior learning general upper secondary school courses *Strengthening the linguistic foundation* (ÄIR1) and *Expanding language skills beyond family and friends* (ÄIR2), *The Romany language and culture in modern society* (ÄIR6) and one of the following: *Oral and written Romany traditions* (ÄIR3), *History and distribution of the Romany language and culture* (ÄIR4), *Romany literature and other arts* (ÄIR5) or *Romany discourse skills and culture* compensate for *Mother tongue, Romany studies* in core subjects.

## 5.1.2 Second national language

### 5.1.2.1 SECOND NATIONAL LANGUAGE, SWEDISH, 1 CREDIT

#### Objectives

Student

- ◆ manages routine work assignments in the ICT industry and everyday situations in the second national language
- ◆ understands the significance of the both national languages and cultures in a multicultural Finland.



## Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	knows the basic principles of using dictionaries and other information sources	uses dictionaries and also other, for example electronic information sources	uses dictionaries, electronic and other sources to acquire further information from simple foreign language instructions in his/her own vocational field
Comprehension of text and written communication	understands the contents of short and simple written messages related to his/her own work and work safety, using helpful tools	writes such short work related texts as work and safety instructions following an example	writes short work related notes, instructions or order forms
Interaction and acting in working life language situations	tells about himself/herself in few words or about familiar things in his/her work	manages routine day-to-day conversation situations, if the other person talks slowly and uses simple, basic vocabulary	acts in common communication situations both face-to-face and on the phone and asks for elaboration or clarification if needed
Significance of language and culture	is aware of the significance of Swedish language and culture	understands the meaning of Swedish language and culture when meeting people from the Nordic countries	understands the position of Swedish language and culture in multi-cultural Finland
Language studies	recognizes his/her own learning strategies.	recognizes the strengths and weaknesses of his/her own learning strategies.	tries new strategies and ways of learning.

**Key competences for lifelong learning:** 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communications and media skills, 11. Active citizenship and different cultures.

Grade Good 2 equals listening and text comprehension language skill level A1.3–A2.1 and speaking and writing skill level A1.3–A2.1 on the description scale of the common European framework of reference for languages: learning, teaching and assessment (Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Published by arrangement with the Council of Europe 2001. European framework. Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Translated into Finnish by Irma Hutunen and Hanna Jaakkola 2003.)

In validation of prior learning general upper secondary school courses *Everyday living in the Nordic countries* (RUA1) or *School and leisure* (RUB1) compensate for *Second national language, Swedish* studies in core subjects.

### 5.1.2.2 SECOND NATIONAL LANGUAGE, FINNISH, 2 CREDITS

#### Objectives

The student possesses such communication and interaction skills that he/she can manage work assignments in their vocational field in Finnish and understands the significance of Finnish in his/her work and private life.

#### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	knows the basic principles of using dictionaries and other information sources	uses professional dictionaries and Finnish language databases	uses dictionaries, manuals, reference books and Finnish websites to gather information
Comprehension of text and written communication	understands the contents of simple work or everyday life related instructions or notices in Finnish	understands the contents of work or everyday life related instructions or notices in Finnish	reads easily and understands various professional texts and manuals in Finnish and follows professionally relevant events from Finnish professional publications and social events in Finnish media
	writes short notices, fills in forms and writes short reviews in Finnish using tools	writes notices, letters and even longer reviews or minutes in Finnish, using tools if needed	fills in forms, writes orders, letters and reports and also answers to inquiries in writing in Finnish

Interaction and acting in working life language situations	understands simple, work or everyday life related instructions and orders and is able to acceptably address a customer or co-worker in Finnish and understand questions made to him/her	understands clear instructions and spoken language in normal tempo at work or on the phone, knows how to interact and understand a customer or a co-worker and also follows professional and social events in the media	understands various instructions and professionally related conversation even when spoken in fast tempo, interacts with Finnish speaking customers naturally and understands their ways and wishes
	attends to Finnish speaking customers satisfactorily, copes with everyday situations and handles the most important work assignments in Finnish	attends to Finnish speaking customers well, answers questions and handles work assignments on the phone and also participates in routine Finnish language conversations at work	discusses his/her work assignments in Finnish without difficulty, knows how to describe processes and details and starts and carries on conversations in Finnish using variable speaking tempo
Significance of language and culture	understands the significance of mastering Finnish in everyday interaction as well as in the Finnish work community	works well in a Finnish work community and strives to improve his/her professional language skills	plays an active role in the Finnish work community and shows interest in the Finnish culture
Language studies	recognizes his/her own learning strategy.	recognizes the strengths and weaknesses of his/her own learning strategy.	tries new strategies and ways of learning.

**Key competences for lifelong learning:** 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communications and media skills, 11. Active citizenship and different cultures.

Grade Good 2 equals listening and text comprehension language skill level B1.2 and speaking and writing skill level B1.1 on the description scale of the common European framework of reference for languages: learning, teaching and assessment (Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Published by arrangement with the Council of Europe 2001. European framework. Translated into Finnish by Irma Huttunen and Hanna Jaakkola 2003.)

In validation of prior learning general upper secondary school courses *Everyday life and leisure* (FINA1) and one of the following: *Nature and the environment* (FINA2) *Commerce, technology and communications* (FINA3), *Society and the media* (FINA4), *Education, occupational and economic life* (FINA5) or *Finnish culture and literature* (FINA6) compensate for *Second national language, Finnish* studies in core subjects.

## 5.1.3 Foreign language

### 5.1.3.1 FOREIGN LANGUAGE, A LANGUAGE, 2 CREDITS

#### Objectives

Student

- ◆ communicates and acts in interactive situations so that he/she can practice his/her profession, contribute to working life, be an active citizen and pursue further studies
- ◆ possesses the language skills required for tasks in the ICT industry
- ◆ knows how to act in a multicultural and multilingual environment in tasks in the ICT industry.

#### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	searches for information in work related materials and instructions under instruction and using dictionaries	searches for professionally relevant information using dictionaries and also other, for example electronic information sources	searches for professionally relevant information in various ways, applies his/her knowledge and skills and justifies his/her decisions
Comprehension of text and written communication	understands short and simple written messages that are related to his/her vocational field	understands written instructions that are related to his/her work, products and processes using tools, asks detailed questions and knows how to act according to the answers given	understands written instructions that are related to his/her work, products and processes and the feedback given
	writes simple and short work related texts under instruction	writes simple and short work related texts following an example	writes usual personal messages and short texts and fills in simple work related documents

Interaction and acting in working life language situations	understands short and simple oral messages related to his/her vocational field and knows how to act according to them	understands the most common oral instructions related to his/her work, products and processes and knows how to act according to them	understands the main idea of ordinary speech in normal tempo and acts accordingly
	tells briefly about himself/herself and about tasks in his/her vocational field by answering the questions asked in foreseeable and familiar work situations	tells about himself/herself and his/her duties in a way that he/she is understood and participates in the conversation if the partner talks slowly and uses simple structures	tells in familiar situations about his/her workplace and duties and about related norms and customs, finds out about the similar things in other countries and acquires further instructions on the duties if needed
Knowledge of language and culture	is aware of the significance of the language studied as well as the culture it represents	understands the significance of the language studied as well as the culture it represents	applies his/her knowledge and skills of the foreign language and culture
Language studies	recognizes his/her own learning strategies.	assesses the strengths and weaknesses of his/her own learning strategies.	strengthens his/her learning by trying new strategies and ways of learning.

**Key competences for lifelong learning:** 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communications and media skills, 11. Active citizenship and different cultures.

Grade Good 2 equals listening and text comprehension language skill level A2.2 and speaking and writing skill level A2.1 on the description scale of the common European framework of reference for languages: learning, teaching and assessment (Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Published by arrangement with the Council of Europe 2001. European framework. Translated into Finnish by Irma Huttunen and Hanna Jaakkola 2003.)

In validation of prior learning general upper secondary school A Language courses *Young people and their world* and *Study and work* compensate for *Foreign language, A language studies* in core subjects.

### 5.1.3.2 FOREIGN LANGUAGE, B LANGUAGE, 2 CREDITS

#### Objectives

Student

- ◆ copes with ordinary everyday service situations
- ◆ knows how to act in foreseeable and recurring communication situations in the ICT industry in a foreign language.

#### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the qualification module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring information	knows the principles of using dictionaries and other information sources	uses dictionaries and other information sources, also electronic, to help him/her to understand	uses dictionaries and other information sources, also electronic, to help him/her produce texts
Understanding texts and written communication	writes under guidance and using helpful tools simple texts, e. g. instructions, adverts or lists from familiar topics	writes texts that consist of short and, using helpful tools, simple sayings and sentences, such as instructions, adverts or lists that are related to well known topics	writes, among other things, texts that consist of short and, using helpful tools, simple sayings and sentences, such as instructions, adverts or lists that are related to familiar topics in both private- and in working life
Interaction and functioning in language situations in working life	can tell about himself/herself and his/her work in few words, e. g. recognizes tools, titles and assignments	asks simple questions and answers accordingly when the discussion is about immediate, concrete environment and himself/herself, when the conversation partner talks slowly and clearly	asks simple questions and answers them when the discussion is about immediate, concrete environment and himself/herself, when the conversation partner talks clearly and also asks for clarification – if needed
			communicates orally e. g. when introducing himself/herself in everyday or working life familiar situations

Knowledge of language and culture	recognizes and differs new sounds and signs	writes new signs and produces new sounds	advances the learning of the new language by comparing it to other languages he/she already masters
Language studies	recognizes his/her own study strategies.	evaluates the strengths and weaknesses of his/her own study strategies.	strengthens his/her learning by trying out new strategies and ways of learning.

**Key competences for lifelong learning:** 1. Learning and problem solving, 2. Interaction and cooperation.

Grade Good 2 equals listening and text comprehension language skill level A1.1 and speaking and writing skill level A1.1 on the description scale of the common European framework of reference for languages: learning, teaching and assessment (Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Published by arrangement with the Council of Europe 2001. European framework. Translated into Finnish by Irma Huttunen and Hanna Jaakkola 2003.)

In validation of prior learning general upper secondary school B1 courses *Young people and their world* and *Study, work and society* compensate for *Foreign language, B language studies* in core subjects.

## 5.1.4 Mathematics, 3 credits

### Objectives

Student

- ◆ masters basic calculations, percentage calculations and unit conversions and uses them in calculations related to the ICT industry
- ◆ calculates areas and volumes as well as applies geometry to the extent required by the professional field
- ◆ uses the appropriate mathematical methods to solve problems related to the ICT industry
- ◆ expresses dependencies of variables with mathematical expressions
- ◆ creates and forms equations, expressions, charts and drawings related to tasks in the ICT industry and solves mathematical problems required at work using equations, deduction and graphs and assesses the validity of the results
- ◆ uses a calculator, computer and, if necessary, other mathematical tools to help solve mathematical problems.

## Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Basic mathematical calculations, percentage calculations and unit variations as well as mathematical key concepts and ways of expression	completes routine work-related calculations and knows mathematical key concepts and ways of expression	completes profession related calculations proficiently and uses, to some extent, mathematical concepts and ways of expression in his/her presentation	applies calculations that are needed in his/her profession and assesses the accuracy of the results and masters the mathematical concepts and ways of presentation that are needed in his/her profession
Mathematical procedures, problem solving and result assessment	solves basic, work-related mathematical problems, either by deduction, graphic expression or calculating and also knows how to assess the scale of the results	solves profession related problems using mathematical procedures and assesses the correctness of the results	applies mathematical procedures in solving and forming profession related problems and assesses the reliability and precision of the methods
Using a calculator and computer	uses a calculator and computer to help solve work-related mathematical basic assignments	uses a calculator and computer efficiently to help solve work-related mathematical problems	uses a calculator and computer innovatively to help solve profession related mathematical problems
Processing, analyzing and producing numeric data	uses statistics, charts and graphical presentations as information sources	uses statistics, charts and graphical presentations to solve profession related problems	applies statistics, charts and graphical presentations to solve profession related problems and also presents the mathematical results as statistics, charts and graphic presentations
	calculates under instruction mathematical averages of material presented.	calculates essential statistical key figures.	calculates or defines statistical key figures on the material given.

**Key competences for lifelong learning:** 1. Learning and problem solving, 9. Mathematics and natural sciences.

In validation of prior learning general upper secondary school courses *Expressions and equations* (MAB1) and *Geometry* (MAB2) or *Functions and equations* (MAA1) compensate for *Mathematics* studies in core subjects.



## 5.1.5 Physics and chemistry, 2 credits

### Objectives

#### Student

- ◆ applies physical and chemical phenomena, concepts and laws that are relevant to his/her professional assignments
- ◆ knows how to take the laws of nature into account in his/her work and other activities and act accordingly to preserve the environment and energy
- ◆ addresses basic environmental problems from a scientific point of view
- ◆ applies laws and concepts of physics that are relevant to his/her profession
- ◆ knows basic concepts and phenomena of mechanics, thermal physics and electricity that are relevant to his/her profession so that he/she can handle the equipment and systems needed in the profession safely and economically and work ergonomically
- ◆ considers environmentally and professionally relevant chemical phenomena at work, which requires him/her to know the chemical properties of the most common elements as well as organic and inorganic compounds
- ◆ stores, uses correctly and disposes appropriately of the substances needed in the industry as well as calculates mass and concentrations
- ◆ is able to interpret factors affecting health and safety from product markings as well as to consider the special properties of substances at work so that he/she does not endanger his/her own safety or that of others and the environment
- ◆ observes and measures physical and chemical phenomena that are relevant to his/her profession
- ◆ collects, processes and analyses the observations and measurements made by him/her.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowing the laws of thermal physics, mechanics and electricity and taking them into consideration at work	knows the laws of physics well enough to take into account the relevant related phenomena but needs guidance at times	takes into account the laws of physics in his/her work assignments	knows how to apply the laws of physics in his/her work independently
Knowing chemical substances and compounds as well as their properties and taking them into consideration at work	handles, stores and disposes correctly of the chemicals he/she uses at work and takes into account the properties and environmental risks of different substances but needs guidance at times	handles, stores and disposes correctly of the chemicals he/she uses at work and takes into account the properties and environmental risks of different substances in familiar work situations	handles, stores and disposes correctly of the chemicals he/she uses at work and takes into account the properties and environmental risks of different substances in changing work situations
	interprets the most common product markings but needs guidance at times	interprets the most common product markings	interprets independently different product markings in the field
	calculates concentrations and substance quantities under guidance as well as searches for information in chemical safety data sheets under instruction	calculates concentrations and substance quantities as well as searches for information in material safety data sheets	calculates concentrations and substance quantities flexibly in different work situations using the information he/she has obtained from different sources
Observation and measurement	carries out measurements using the most common methods and equipment in a guided work situation	carries out measurements using the most common methods and equipment independently and knows how to assess the reliability of the results	uses the most suitable measurement methods and equipment professionally, takes measurements in an organized and cautious way and knows how to assess the precision and reliability of the observations and measurements
	documents the measurements and observations made according to instructions and presents them as tables and graphs and calculates results if needed but needs guidance in certain areas	knows how to analyze the measurements and observations as well as to draw conclusions on the results	knows how to report and present results as well as how to assess the precision and reliability of the results and conclusions
Working safely and ergonomically	works according to safety instructions but needs guidance for ergonomic working.	works ergonomically and observing safety instructions.	works ergonomically and observing safety instructions and takes into account the risk factors in the working environment independently.

**Key competences for lifelong learning:** 1. Learning and problem solving, 4. Health, safety and ability to function, 6. Sustainable development 9. Mathematics and natural sciences, 10. Technology and information technology.

In validation of prior learning general upper secondary school courses *Physics as a natural science* (FY1) and *The chemistry of man and of the living environment* (KE1) compensate for *Physics and chemistry* studies in core subjects.

## 5.1.6 Social, business and labour-market subjects, 1 credit

### Objectives

Student

- ◆ contributes to the management of common affairs at school and in the on-the-job training place
- ◆ assesses his/her abilities to be an active citizen and consumer
- ◆ knows how to use the services society offers
- ◆ draws up a plan to manage his/her own finances
- ◆ assesses the significance of entrepreneurship to the Finnish national economy
- ◆ searches for information on job in his/her vocational field as well as information on the European Union and its citizens.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Participation at school and in the on-the-job training organization	participates in the management of common affairs under guidance	participates in the management of common affairs as agreed and knows the social decision making process	participates in the management of common affairs independently and knows the social decision making process

Assessing the opportunities to act	assesses his/her abilities to act as a citizen and consumer under guidance	assesses his/her opportunities to function as a citizen and consumer	assesses his/her opportunities to function as an active citizen and as a consumer
	knows the rights, obligations and ways to influence as a student	knows the rights, privileges, obligations and key ways to influence as a student and citizen	knows the rights, privileges, obligations and key democratic ways to influence as a student and citizen
	searches for information on the basic rights and responsibilities of a consumer	knows the basic rights and responsibilities of a consumer	knows the basic rights and responsibilities of a consumer
Using the services of society	uses the services a student needs and understands the citizens' role in financing them	uses the services society offers and understands the citizens' role in financing them	uses the services society offers independently and understands the citizens' role in financing them
Taking care of one's own finances	draws up a plan for his/her expenditure and finances under guidance	draws up a plan for his/her expenditure and finances	draws up a plan for his/her expenditure and finances
	searches for information on financing options and their costs under guidance	searches for information on financing options and their costs	searches for information about financing sources and compares their costs
Assessing the key factors affecting national economy	assesses the key impact of entrepreneurship on employment	assesses the impact of entrepreneurship and business operations on employment	assesses the impact of entrepreneurship and business operations on employment independently
Searching for information vacancies in the vocational field and the European Union	searches for information on vacancies in the vocational field locally	searches for information on vacancies in the vocational field regionally and nationally	searches for information on vacancies in the vocational field regionally, nationally and in other EU countries
	searches for information on EU citizens under guidance.	searches for information on the EU and its citizens.	searches for comparative information on the EU and its citizens.

**Key competences for lifelong learning:** 2. Interaction and cooperation, 5. Initiative and entrepreneurship, 11. Active citizenship and different cultures.

In validation of prior learning general upper secondary school courses *Politics and society* (YH1) and *Economics* (YH2) compensate for *Social, business and labour-market* studies in core subjects.

## 5.1.7 Physical education, 1 credit

### Objectives

Student

- ◆ promotes a healthy and active lifestyle through physical education while understanding the benefits of physical education on one's ability to function and work
- ◆ becomes familiar with diverse forms of physical exercise that promote health, mental vitality and endurance
- ◆ maintains his/her ability to function through exercise
- ◆ exercises and behaves responsibly both independently and in a team
- ◆ facilitates the work and safety of a team through his/her actions.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Supporting and strengthening physical ability to function	uses the basic skills needed for physical exercise	uses the basic skills needed for physical exercise variedly	uses the basic skills needed for physical exercise and sport specific skills variedly
	keeps up his/her physical ability to function under guidance	keeps up his/her physical ability to function	monitors, assesses and keeps up his/her physical ability to function
Keeping up and promoting physical, psychological and social wellbeing with the help of physical exercise	understands the meaning of exercise to physical, psychological and social wellbeing under guidance	understands the meaning of exercise to his/her physical, psychological and social wellbeing	understands the meaning of exercise to physical, psychological and social wellbeing
Interaction and cooperation	takes part in physical exercise following the instructions given and observes the principles of fair play	takes an active part in physical exercise observing the principles of fair play	takes an active part in physical exercise promoting the principles of fair play
Considering health, safety and ability to function	usually observes safety in sports.	acts safely when taking physical exercise both independently and in a group.	promotes group safety with his/her actions.

**Key competences for lifelong learning:** 2. Interaction and cooperation, 4. Health, safety and ability to function.

In validation of prior learning general upper secondary school courses *Skill and condition* (LI1) or *Individual and group training* (LI2) compensate for *Physical education* studies in core subjects.

## 5.1.8 Health education, 1 credit

### Objectives

Student

- ◆ displays the will and the ability to maintain and promote health with his/her actions and knowledge
- ◆ understands the factors in his/her own lifestyle and operating environment that impact physical, mental and social ability to function
- ◆ knows the meaning of mental health, sexual health and human relations to one's wellbeing
- ◆ knows the harmful effects of smoking and intoxicants and knows how to prevent health damaging factors
- ◆ knows about lifestyles and habits that benefit health
- ◆ understands the links between exercise, nutrition, rest, sleep, recreation, human relations and health and takes them into account at work
- ◆ recognizes the key factors that burden health and working capacity in the ICT industry and knows how to develop his/her working methods and the safety and healthiness of his/her working environment in cooperation with others
- ◆ knows how to prevent injuries, copes with the most common first aid situations and knows how to get help and work ergonomically
- ◆ knows about the health differences of the population and the risk factors and prevention of the most common national diseases
- ◆ identifies factors that influence his/her endurance and knows how to work to promote it
- ◆ knows how to use student and other health care services when necessary and utilise health-enhancing physical activity, understanding their significance to maintaining his/her ability to function.

## Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Maintaining and promoting physical, psychological and social health and wellbeing	takes into account, under instruction, the most common lifestyles and habits that benefit health (such as physical exercise, nutrition, rest, sleep, recreation, mental health, human relations, sexual health) and is willing to promote his/her own health and endurance	takes into account the most common lifestyles and habits that benefit health, participates in activities that promote them and his/her own endurance	acts in a way that promotes his/her health, wellbeing and endurance, prevents factors that are harmful to health and justifies his/her actions with research data and experience that link together lifestyle and health
Following the method of operation that promote physical, psychological and social health and safety of the operating environment	follows the methods of operation of the organization that promote health and security but needs guidance in new situations	takes into account the factors that burden health and his/her ability to function and wants to promote healthiness and safety in his/her actions and the operating environment	considers factors that impact health and safety from different points of view and promotes the wellbeing of the community with his/her own actions
Making use of health enhancing physical activity and health care services	plans and engages in health promoting exercise under guidance and knows how to search for help from healthcare services when necessary	engages in health promoting exercise following a programme made and uses healthcare services when necessary	makes use of the possibilities of health enhancing physical activity independently to help keep up his/her ability to function and knows how to use the health care services accordingly
Prevention of injuries, first aid and ergonomic activity	recognizes possible injury risks, knows how to get and give first aid in most common situations requiring first aid and also follows ergonomic procedures in familiar situations	prevents injuries with his/her actions, knows how to get and give first aid and also follows ergonomic procedures	acts carefully and prevents injuries, knows how to get and give first aid and also follows ergonomic procedures and saving him-/herself

Possessing the knowledge base of factors promoting physical, psychological and social health and ability to function and factors preventing national diseases and harming health as well as the adverse effects of the profession	knows about the most common health hazards (such as smoking and substance abuse) and also about the most common factors that burden health and condition and about national diseases but needs guidance to search for information on health promotion.	makes use of knowledge base that promotes health and ability to function in his/her activities, knows the factors harmful to one's health as well as health hazards due to unhealthy lifestyle and is aware of possible occupational health issues.	utilises information that promotes health and ability to function in his/her activities variedly and searches for information on possible occupational health issues independently.
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**Key competences for lifelong learning:** 1. Learning and problem solving, 2. Interaction and cooperation, 3. Vocational ethics, 4. Health, safety and ability to function, 6. Sustainable development, 8. Communications and media skills, 10. Technology and information technology

In validation of prior learning general upper secondary school courses *Foundations of health* (TE1) compensates for *Health education* studies in core subjects.

### 5.1.9 Arts and culture, 1 credit

#### Objectives

Student

- ◆ understands the meaning of arts and culture in his/her own life and uses their various forms in a multicultural community
- ◆ participates in artistic and cultural events, develops culture in the school community and maintains its aesthetic appearance
- ◆ expresses ideas, experiences and feelings through, for example, music, dance, theatre, literature or visual arts and appreciates the ways of expression and visions of others.

#### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.



TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Making use of arts and culture	participates in art and culture events	fosters the culture of the school community by maintaining its aesthetic looks	renews the culture of the school community by developing its aesthetic looks
Creating a production	plans and creates a product that displays his/her thoughts, experiences and emotions under guidance, in the way that best suits him/her	plans and creates a product that displays his/her thoughts, experiences and emotions in a way that best suits him/her	plans and creates a product, production or performance that portrays and displays his/her thoughts, experiences and emotions in a way that best suits him/her
	takes into account, according to the instructions saving energy and conserving nature in use of material and in his/her work	acts in a way that conserves nature and saves energy when using materials and working	chooses the materials for his/her work in a way that it conserves nature and saves energy
Appreciation of the expression and views of the others	tells about the cultural characteristics that he/she has recognized in the expressions of the others.	gives constructive feedback on the expression and views of the others.	develops his/her own expression by appreciating the views of the others.

**Key competences for lifelong learning:** 2. Interaction and cooperation, 6. Sustainable development, 7. Aesthetics.

In validation of prior learning general upper secondary school courses *Me, visual images and culture* (KU1), *Environment, place and space* (KU2), *Music and me* (MU1) or *A polyphonic Finland* (MU2) compensate for *Arts and culture* studies in core subjects.

## 5.2 OPTIONAL MODULES

### 5.2.1 Optional additional modules to compulsory core subjects

Core subjects listed in Section 5.1 can be chosen as Optional additional modules to core subjects. The education provider defines their objectives, basic contents and assessment.

## 5.2.2 Environmental studies, 4 credits

### Objectives

Student

- ♦ observes working methods and practices that comply with the principles of sustainable development so that they help him/her to achieve and complement his/her vocational skills
- ♦ works in a way that saves energy
- ♦ prevents the formation of waste and sorts waste appropriately and also knows the lifecycle of products that are relevant to his/her professional skills
- ♦ works in a way that minimises environmental risks and preserves cultural heritage.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowing the most important global, regional and local environmental problems and their proposed solutions as well as how to act according to the principles of sustainable development and responsible activity	knows the basic principles of sustainable development in his/her work	knows the challenges of sustainable development and how he/she can try to observe the principles of sustainable development at work	knows the basics of circulation of matter and flow of energy on the earth knows challenges of sustainable development and suggested solutions as well as how to act according to the principles of sustainable development in his/her work
Knowledge of vocationally essential waste management and prevention of waste	knows how to prevent waste and how to sort waste under guidance in ordinary duties	knows how to prevent waste and sorts waste according to instructions	knows how to prevent waste when designing and acquiring products and packaging and sorts waste independently

Preservation of cultural heritage in a way that complements vocational skills	recognizes the basics and significance of cultural heritage under instruction	knows how to preserve cultural heritage in his/her profession	is active in the preservation of the cultural heritage in his immediate environment and promotes it in his/her profession
Choosing eco-efficient working methods and materials as well as recognizing the life span of the key products from the point of view of vocational skills	chooses tools and materials that promote eco-efficiency under instruction	chooses tools and methods that promote eco-efficiency	chooses tools and methods that promote eco-efficiency and also recognizes their impact on the lifespan
Observing environmental legislation and acting according to environmental quality systems	work under instruction observing the essential environmental regulations in the profession	works according to the environmental regulations	acts according to the environmental regulations and foresees future changes
	work under instruction observing environmental quality system	works according to the environmental quality systems in his/her profession	participates actively in the drawing up and/or development of the environmental quality system at the workplace
Obtaining and using information sources essential from the point of view of acquiring vocational skills	searches under instruction for environmental information from different sources and modifies it to suit vocational needs.	sorts, compares and analyses gathered environmental information and modifies it to suit vocational needs.	sorts, compares and analyses gathered environmental information, modifies it independently and applies it in his/her work.

**Key competences for lifelong learning:** 1. Learning and problem solving, 3. Vocational ethics, 6. Sustainable development, 8. Communications and media skills, 10. Technology and information technology

In validation of prior learning general upper secondary school course *Environmental ecology* (B13), compensates for 1 credit of *Environmental studies* in core subjects.

## 5.2.3 Information and communications technology, 4 credits

### Objectives

#### Student

- ◆ uses IT tools and systems required in tasks in the ICT industry to collect, process, edit, save and present data
- ◆ adopts and applies new IT peripherals, functions and programmes (using help-desk support, if needed)
- ◆ works using efficient methods and practices, such as touch typing and different mouse techniques
- ◆ uses operating systems software and makes use of software tools, such as word processing, spread sheets, e-mail, presentation graphics and calendar software to produce, edit and present information needed in the professional assignments
- ◆ processes the files produced by applications software used for work assignments in the ICT industry and searches for information needed in the assignments using different online search engines and applications
- ◆ uses the network communications methods and applications required in tasks in the ICT industry to send and share data
- ◆ observes copyright, data security and privacy instructions and regulations
- ◆ uses ergonomically correct working postures.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Acquiring and processing information	searches, saves and copies files needed for work assignments and also searches for information needed for work assignments from online services	knows how to use professionally relevant files and web search engines appropriately and efficiently	takes into account the technical limitations and possibilities in file management applies professionally relevant web search engines case-by-case and situation-by-situation and uses them actively and also assesses the reliability and suitability of the information gathered
Information processing and editing	uses application software in his/her work assignments, such as word processing, spreadsheet, email, presentation graphics and calendar software	uses application software efficiently to produce and edit work related data	uses application software variedly to produce and edit information according to different working situations and circumstances
Sending and sharing of information	uses web communications methods in work assignments	uses different web communications methods efficiently to send and share work related information	applies the alternatives offered web communications to the different work related situations and needs, as well as takes into account the responsibility and safety aspects concerned
Observing copyrights, information security, confidentiality and ergonomics	acts according to copyright, information and data security and ergonomics instructions and regulations.	uses ergonomically recommended ways of working.	foresees and considers information and data security risks and develops his/her working environment and methods with information and data security and ergonomics objectives in mind.

**Key competences for lifelong learning:** 1. Learning and problem solving, 2. Interaction and cooperation, 8. Communications and media skills, 9. Mathematics and natural sciences, 10. Technology and information technology

The qualification requirements for general upper secondary schools do not include a course that would compensate for the *Information and communications technology* studies in vocational upper secondary education.

## 5.2.4 Ethics, 4 credits

### Objectives

#### Student

- ◆ ponders the meaning of values, norms and views in his/her life, human relations and at work
- ◆ justifies his/her choices and is able to assess their impact in terms of human dignity, justice and sustainable development
- ◆ shows honesty and responsibility in his/her actions, respects other people and behaves according to good manners in his/her work and relationships
- ◆ ponders ethical questions and problems that relate to his/her own life, relationships, society, the environment and working life
- ◆ knows how to resolve work-related value and norm conflicts both independently and together with others in his/her own vocational field in an ethically acceptable way
- ◆ behaves ethically in different conflict and crisis situations
- ◆ has the readiness to participate in the development of the value base and ethical principles of the ICT industry
- ◆ acquires information on the knowledge base of professional ethics in his/her vocational field and other vocational fields, understanding and using it as a professional resource at work
- ◆ observes and recognizes ethical problems in the ICT industry, processes them and presents justified views on them.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Pondering ethical questions	discusses values related to his/her own life and relationships under instruction and talks about ethical and world view questions	discusses ethical, world view questions as well as questions and values related to his/her own life and human relations	ponders the significance of values, norms and different world views in his/her own life, in relationships between other people and in working life and society as a whole
Ethical actions	observes good manners and responsibilities at work and in its problem situations but need support and instruction in new situations	acts responsibly and ethically at work and in working life contradiction and crisis situations	acts independently, responsibly and ethically in work and working life contradiction and crisis situations and knows how to justify his/her actions
Acquiring information and using ethic knowledge base at work	searches for information on ethical questions in his/her vocational field under instruction and uses knowledge base in familiar situations	searches for information on vocationally ethical knowledge base of his/her own and other fields and uses it in his/her own life and work	actively acquires information on vocationally ethical knowledge base of his/her own and other fields and uses it as a professional resource
			justifies his/her choices and wants to participate in the development of the ethical principles and value basis his/her own field
Processing value and norm contradictions at work	knows how to detect ethical problem situations in his/her profession and solves work related value and norm contradictions ethically together with members of the community.	recognizes ethical problem situations in his/her profession and searches for solutions to these problems together with others and also assesses the impact of the solution from the point-of-view of the key parties.	recognizes independently the ethical problem situations in working life and in his/her own vocational field, knows how to solve them ethically and assess their impact on the basis of human dignity, justice and sustainable development.

**Key competences for lifelong learning:** 1. Learning and problem solving, 3. Vocational ethics, 6. Sustainable development, 8. Communications and media skills, 10. Technology and information technology

In validation of prior learning general upper secondary school courses *Introduction into philosophical thinking* (FI1) and one of the following entities a) *Nature and significance of religion* (UE1), *The church, culture and society* (UE2) and *Human life and ethics* (UE3), or b) *The Orthodox world* (UO1), *Dogmatics and ethics* (UO2), and *Biblical studies* (UO3) or c) *A good life* (ET1), *The world view* (ET2) and *Individual and community* (ET3) compensate for *Ethics* studies in core subjects.

## 5.2.5 Cultural knowledge, 4 credits

### Objectives

#### Student

- ◆ works with people representing different cultures
- ◆ knows how to greet and receive visitors and talk to them
- ◆ is able to observe the limits of appropriateness in his/her activities, the different roles of men and women, the dress code and code of conduct as well as the unwritten rules and procedures
- ◆ recognizes cultural differences in workplace behaviour, hierarchy and work-related public relations and behaves appropriately in ordinary work situations, especially customer service
- ◆ describes the common cultural features of his/her country to representatives of other cultures, such as general history, sights, arts, sports achievements and entertainment as well as skills, working methods and innovations in the ICT industry
- ◆ ponders the interpretations of historical events in different countries and relates the meaningful events and eras of his/her native region and home country to the history of the neighbouring countries and the world
- ◆ compares the key cultural trends and icons in his/her country and Europe
- ◆ recognizes the special features of his/her vocational field in other countries.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.



TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Taking into account the most common cultural features	recognises general features of other cultures	recognizes cultural differences in other people's activities	takes into account the cultural background of the people he/she meets
Behaviour and dress code in different situations and meeting different people	recognises cultural differences in people's day-to-day activities in Finland and elsewhere	works together with other people despite cultural differences	meets foreign co-workers, clients and visitors without cultural conflicts
Taking into account the special features in one's vocational field	recognizes the features of services and products in his/her field in different countries	compares the features of his/her culture to those in other cultures	takes into account the features of other cultures in his/her actions
Behaving according to organisation environment and duties	recognizes the key factors in his/her work	tells foreign visitors essential things about Finland and his/her work	develops his/her own organisation based on the experiences he/she received from others
Taking essential cultural history and present situation of the immigrants and other minority cultures into account	searches for information on the backgrounds of immigrants and other minority cultures	takes others into account while working despite their ethnic background, language, disability or age	takes others into account while planning his/her work and working despite their ethnic background, language, disability or age
Making use of language skills and cultural knowledge	uses the language skills acquired in familiar situations.	uses the language skills acquired in international interaction situations.	works in international connections using his/her language skills.

**Key competences for lifelong learning:** 2. Interaction and cooperation, 8. Communications and media skills, 11. Active citizenship and different cultures.

The qualification requirements for general upper secondary schools do not include a course that would compensate for the *Cultural knowledge* studies in vocational upper secondary education.

## 5.2.6 Psychology, 4 credits

### Objectives

Student

- ♦ observes and understands humans and the factors affecting human behaviour in diverse ways
- ♦ recognizes, acknowledges and processes mental phenomena with the help of psychological knowledge and concepts
- ♦ applies psychological knowledge to work in the ICT industry
- ♦ applies the psychology of learning to his/her own studies
- ♦ knows how to observe and think critically
- ♦ knows how to observe the impact of feelings in different interactive and group situations
- ♦ explains his/her behaviour and that of others using psychological and socio-psychological knowledge
- ♦ knows how to act in a way that promotes his/her mental wellbeing and coping with assignments in his/her vocational field
- ♦ copes with customer service and teamwork situations related to his/her work.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Knowledge of psychological concepts and explaining and understanding human behaviour	knows the common concepts of psychology and understands their connection to human behaviour	uses psychological information to explain human behaviour in common everyday and working life situations	is able to apply his/her knowledge of cognitive psychology and personality psychology to common working life situations and is able to explain his/her behaviour and the behaviour of others through them

Knowledge of the development of human psyche	knows the psychological, biological and social factors that form the basis for individual psychological development	understands the inter-relations of the factors forming the foundations for psychological development in different phases of life and at different ages	understands the possible problems of psychological development and understands the development can be influenced
Learning and self-awareness	knows key factors that affect the learning situation	assesses his/her own learning, under instruction relying on psychological knowledge	understands the learning process through psychological knowledge and applies it in his/her studies
Understanding the effect of motivation, feelings and commitment on his/her work performance and that of others	takes the significance of motivation, feelings and commitment into account in his/her own performance	works with different people in his/her work and study community and understands the significance of motivation and commitment on performance	applies basic psychological knowledge of human thinking, observation, personality features, feelings and other mechanisms regulating behaviour
		understands the impacts of committing to work and indentifying oneself with the group on work performances and coping at work	uses psychological knowledge to improve his/her self-knowledge and self-image
			acknowledges his/her own feelings and those of others and also controls his/her feelings and attitude in working life accordingly
Maintaining psychological capability to work and functioning	promotes his/her psychological capability to work and function under instruction	knows how to maintain psychological well-being and contributes to the well-being of the workplace	acknowledges the psychological factors that affect his/her own endurance and stress management and also knows how to influence them in a way that promotes his/her endurance
		understands the complexity of defining mental health	knows how to get help in his/her own mental health questions or those of persons in his/her immediate family
Acting in human relationship and interactive situations in the workplace	applies the most essential psychological knowledge when acting in common workplace customer service and interactive situations	knows the significance of social interaction and culture in psychological human behaviour and recognizes different methods of leadership and their influence on the work culture	works cooperatively in different roles and understands the meaning of leadership
Knowledge of the social aspect of socio- psychological information	knows the key concepts of social psychology.	understands the effect of the roles, norms and group dynamics in different social groups.	understands the behaviour of people from different social and cultural backgrounds through social psychology.

**Key competences for lifelong learning:** 1. Learning and problem solving, 2. Interaction and cooperation, 3. Health, safety and ability to function.

In validation of prior learning general upper secondary school courses *Mental activity, learning and interaction* (PS1) compensates for one credit of *Psychology* studies in core subjects. If the student has also completed *Human psychological development* (PS2), *Motivation, emotions and higher-level cognitive activity* (PS4) and *Personality and mental health* (PS5), they compensate for *Psychology* studies in core subjects.

## 5.2.7 Entrepreneurship, 4 credits

### Objectives

Student

- ◆ develops a business idea or productises his/her own know-how into entrepreneurship
- ◆ assesses the development needs based on changes in the operating environment, customer needs, competition, work environment and his/her own expertise
- ◆ follows the principles of profitable business operations in his/her entrepreneurship and also takes into account the cost structure of operations and the impact his/her own work input on profitability.

### Assessment

The table comprises the assessment criteria for three levels of competence together with the targets of assessment. In vocational upper secondary education and training the targets of assessment also constitute the core contents of the module.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA		
	Satisfactory 1	Good 2	Excellent 3
	Student		
Developing a business idea or productising one's own skills	develops a business idea as a member of a group or productises his/her own expertise under instruction	develops a business idea as a member of a group or productises his/her own expertise	develops a business idea independently or productises his/her own expertise making use of the expertise in the working community
	defines procedures, central services or products related to his/her business operations under instruction	finds out about operational or business ideas related to his/her business operations and key services and products working in a group	finds out about the operational or business ideas of different companies or organisations and key services and products related to business activities
	acquires under instruction information on product or service development needs based on e.g. changes in operating environment, customer needs, competition or company expertise	acquires information on product or service development needs based on e.g. changes in operating environment, customer needs, competition or company expertise working in a group	acquires independently information on product or service development needs based on e.g. changes in operating environment, customer needs, competition or company expertise
	surveys different alternative solutions under instruction	surveys different alternative solutions	surveys different alternative solutions independently
	compares different options under instruction	in his/her work compares options and sets quality and cost objectives that take sustainable development into account	in his/her work compares options and sets quality and cost objectives that take sustainable development into account
		presents the alternatives to e. g. an expert, the foreman or clients	presents the alternatives he/she considers the best e. g. to an expert, the foreman or clients and negotiates on them
Planning business activities	chooses the alternative to be carried out under instruction and draws up an operation plan for it that contains the key information on execution	chooses the option that is to be executed cooperatively and derives an operation plan for it that contains the basic information about the execution	chooses or agrees on the viable alternative and draws up an operation plan for it that contains the key information on execution
	talks about the plan and makes the changes agreed on	presents the plan and changes it based on feedback received	presents the plan and develops it based on feedback received

Executing development projects or business activities	executes the operation plan drawn up under instruction	executes the operation plan drawn up	executes independently the operation plan drawn up
	adopts usual working methods, tools and materials required for the operation plan under instruction using information technology	adopts usual working methods, tools and materials required for the operation plan using information technology	uses work methods, tools and materials required for the operation plan in interaction with his/her working community using information technology
	works with experts under instruction in different stages of the activities	works with experts in different stages of the activities	uses expert networks in different stages of the activities
Assessment of the execution of one's own activities, projects or business operations	works in the enterprise observing safety instructions and agreed principles of sustainable development	works in the corporation observing safety instructions and agreed principles of sustainable development	works in the corporation observing safety instructions and especially the principles of quality and sustainable development
	assesses the progress of his/her own activities and business operations under instruction	assesses the progress of his/her own activities and business operations	assesses the progress of his/her own activities and business operations against the objectives set
Presenting of a development project or business operations	makes the changes agreed on	agrees on possible changes	makes justified change or improvement suggestions and agrees on their execution
	presents the execution phase and its results under instruction	presents the execution phase and its results	presents his/her whole development project or business operations and its results in a way that fits the nature of the project
Success and overall profitability of activities	works under instruction in his/her work or business activities observing profitability	works or runs his/her business operations observing profitability	works, acts in a working community or runs his/her business operations observing profitability
	calculates the share of the cost accumulated by his/her own work input.	calculates the costs of the activities and the share accumulated by his/her own work input.	works cost-efficiently while considering time and other available resources and also calculates the costs of the operation and the share accumulated by his/her own work input.

**Key competences for lifelong learning:** 1. Learning and problem solving, 2. Interaction and cooperation, 5. Initiative and entrepreneurship, 6. Sustainable development, 10. Technology and information technology

The qualification requirements for general upper secondary schools do not include a course that would compensate for *Entrepreneurship* studies in vocational upper secondary education.



# 6

## FREE CHOICE MODULES IN CURRICULUM-BASED VOCATIONAL EDUCATION AND TRAINING, 10 CREDITS

A student is to include 10 credits of free choice modules into his/her studies, the objectives and assessment of which are to be included in the student's personal study plan.

Free choice modules can be vocational studies in one's own or other vocational fields, or core subjects, general upper secondary studies or studies preparing for the matriculation examination or further studies, working experience or guided hobbies, which support the general and vocational training objectives and the growth of the student's personality.

# 7

## STUDENT ASSESSMENT IN CURRICULUM-BASED VOCATIONAL UPPER SECONDARY EDUCATION AND TRAINING

### 7.1 TASKS AND OBJECTIVES OF ASSESSMENT

In addition to what the Act on Changing the Act on Vocational Education and Training (Act 601/2005, section 25) stipulates, assessment is used to guide, motivate and encourage a student to reach the objectives and support him/her to develop a positive self-image and grow as a professional. In addition to guiding and supporting, the student assessment is to produce information on students' competence for the student him-/herself, the teacher and employer as well as for possible applying for further studies.

### 7.2 INFORMING ABOUT ASSESSMENT

The implementation of student assessment forms an entity, in which the education provider must include in its curriculum a plan on how to assess the various qualification modules. It includes a plan on the implementation and assessment of skills demonstrations approved by the local board for vocational skills demonstrations (Act 601/2005, section 25 a).

Before the studies begin, the students and all those taking part in the assessment process must be informed of the assessment principles and how they are to be applied (Decree 603/2005, section 3). The matters to be informed are at least the tasks and objectives of assessment, recognition and validation of prior learning, assessment of learning and competence including on-the-job learning and skills demonstrations, targets and criteria of assessment, deciding on the grade, reassessment process and improving the grades, rectification of assessment and receiving a qualification certificate.



## 7.3

# RECOGNITION AND VALIDATION OF A STUDENT'S PRIOR LEARNING

The education provider is to inform the student of what kind of material and documents must be presented for the recognition of prior learning and when the student must apply for recognition of prior learning (Decree 603/2005, section 3).

### **Recognition of prior learning**

In addition to what the Government Decree on amending the Decree on Vocational Education and Training (Decree 603/ 2005, section 10 (1) stipulates, a student's competence must be assessed as early as at the beginning of the studies. The student's competence and its level must be investigated for the identification of his/her strengths and for the recognition of prior learning. Recognition of prior learning forms the basis when setting his/her personal objectives, but also to be able to determine the amount of guidance and support needed.

Recognition of prior learning calls for an assessment discussion in which the student and teacher or teachers participate. To promote recognition of prior learning different facilitating assessment methods must be developed.

### **Validation of prior learning**

In addition to what the Act on Amending the Act on Vocational Education and Training and the Decree on Amending the Decree on Vocational Education and Training stipulate (Act 601/2005, section 30, Decree 603/ 2005, section 12 a), recognition on prior learning is to prevent overlapping studies and shorten the study time.

If the recognition process shows that the objectives set for the module in question, or part thereof, have been reached, such prior learning is validated. Validation of prior learning is recorded in the student's personal study plan. More detailed information on personal study plan in Chapter 8.1.

Validation of prior learning is part of student assessment and it is subject to the same statutes as other forms of assessment (Act 601/2005, sections 25, 25a and 25c). Studies in the qualification to be completed can be substituted or accredited by validation of prior learning. The modules substituted by the validation of prior learning are marked in the qualification certificate (Chapter 7.9). The teacher or teachers in charge of the studies in question decide on the validation of prior learning. No general time limit can be set before which the acquired competence could not be validated, but the validity of the competence can be checked. If necessary the

student must demonstrate the correspondence of his/her competence with the skills requirements and objectives of the qualification concerned.

The studies assessed in another qualification certificate or general upper secondary school certificate compensate for corresponding core subjects as well as free choice modules and the optional modules included in vocational modules, a total of 40 credits at most. Recognition of individual general upper secondary school courses into core subjects is regulated in Chapter 5.

If there is no grade for the competence that covers a complete module and has been achieved through earlier studies or in another way, such competence must be demonstrated to receive a grade for the qualification certificate. Skills demonstrations are used to show evidence of competence in vocational qualification modules. In further and specialist vocational qualifications the grade “approved” awarded by the qualification committee is marked in the qualification certificate for the recognised module.

The grades of qualification modules which are substituted through recognition and validation can be raised during training. After the training is completed such improvement of grades is done as a private student.

## Conversion of grades

The grade scale is valid in a way that is stipulated in the Decree on Amending the Decree on Vocational Education and Training (Decree 488/2008, section 10). A student is assessed based on the assessment practices prevailing in the institute, where he/she currently pursues his/her studies. If the grade scales differ from one institute to another, the institute performing the recognition must convert the grades and determine their correspondence in the student’s favour. The grades are to be converted as follows:

GRADE SCALE		
1–3	1–5	5–10
excellent 3	excellent 5	excellent 10
		excellent 9
good 2	good 4	good 8
	good 3	satisfactory 7
satisfactory 1	satisfactory 2	fair 6
	satisfactory 1	pass 5

## 7.4

# ASSESSMENT OF LEARNING AND COMPETENCE

Student assessment is criteria based, which is to say that a student's learning and competence is always compared to either the skills requirements of vocational qualification modules or the objectives of core subjects as well as the assessment criteria based on them.

A student has the right to learn before the competence described in the skills requirements and the learning objectives are assessed to obtain a grade in the qualification certificate.

### **Assessment of learning**

The objective of assessment of learning is that the student knows what he/she knows and what there is still to learn. When performing assessment of learning, the teacher and workplace instructor must use methods that motivate and activate the student. They are used to support and motivate the student to reach the skills requirements or objectives as well as to develop his/her self-assessment skills. The student assesses his/her learning based on the skills requirements, objectives and assessment criteria of the module.

Learning is assessed during the whole training period or duration of studies by giving the student oral or written feedback on the progress of learning. Numerical assessment is not needed when assessing learning. Feedback is used to support and guide the student to achieve the best possible performance by bringing out the student's strengths. Assessment of learning is used as a basis to make the necessary changes in the student's tuition and learning support. The changes are recorded in the personal study plan.

### **Assessment of competence**

The student receives the grades shown in the qualification certificate based on assessment of competence using the assessment scale prescribed in the valid Decree on Vocational Education and Training.

When competence is being assessed, the assessment methods are chosen so that they measure reaching the skills requirements and objectives set, suit the study methods used and support the student's learning process. The students must have an opportunity to show his/her competence in various ways and also assess his/her competence him-/herself.

Skills in vocational modules are assessed using a skills demonstration and other ways of assessing competence. A skills demonstration is used to assess the competence determined in vocational skills requirements as widely as possible but at least what the qualification requirements state. If necessary, other forms of competence assessment supplements the competence necessitated by skills requirements. The education provider decides on the other methods to assess competence in its assessment implementation plan.

## Skills demonstrations

In addition to what the Act on Amending the Act on Vocational Education and Training and Decree on Amending the Decree on Vocational Education and Training (Act 601/2005, sections 25, 25a and 25b, Decree 603/2005, section 5) stipulate on skills demonstrations, local board for vocational skills demonstrations, assessment and assessors, quality of skills demonstration venues and occupational safety, the skills demonstrations are planned, implemented and assessed in cooperation between the institute and the workplace based on the qualification requirements.

In a skills demonstration the skills requirements of vocational qualification modules are demonstrated as stated in Chapter 4. A skills demonstration is given in all the vocational qualification modules, optional modules included, if they are vocational modules. In core subjects and free choice modules skills demonstrations are not arranged. However, the education provider can decide that a skills demonstration is arranged in free choice modules if they are vocational modules.

A grade for a skills demonstration is given for all the vocational modules. A skills demonstration can be given in one or more modules at a time. If competence in more than one module is assessed in one and the same skills demonstration, a separate grade must be given for each module as per target of assessment set. If a skills demonstration for a qualification module is given in more than one parts, a grade is given for each part as per target of assessment, but an overall grade is not formed until all the parts have been completed.

Skills demonstrations are placed along the duration of the studies. The student must have an opportunity to acquire the competence to be assessed in the skills demonstration before the demonstration is arranged and improve his/her performance based on the feedback received on the demonstrations. The principles of coordinating on-the-job learning and skills demonstrations are listed in the skills demonstration implementation and assessment plan, which the local board for vocational skills demonstrations approves.

A student is also allowed to give skills demonstrations abroad, which must be agreed on in advance.

The education provider ensures that the student receives sufficient support and guidance to give a skills demonstration. Support and guidance are given before skills demonstrations, during them as well as in the form of constructive feedback after them.

## **Targets and criteria of assessment**

The targets of assessment (what is assessed) and assessment criteria (level of competence) are stated in the qualification requirements module by module for levels: Satisfactory 1, Good 2 and Excellent 3. Assessment focuses on

- ◆ mastering the work process
- ◆ mastering the work methods, equipment and material
- ◆ underpinning knowledge
- ◆ mastering the key competences for lifelong learning.

Key competences for lifelong learning are learning and problem solving, interaction and cooperation, vocational ethics, health, safety and ability to function, initiative and entrepreneurship, sustainable development, aesthetics, communication and media skills, mathematics and natural sciences, technology and information technology, active citizenship and different cultures.

In the targets of assessment Key competences for lifelong learning, the following four key competences are assessed: learning and problem solving, interaction and cooperation, vocational ethics together with health, safety and ability to function. Other key competences are assessed in connection with the work process, work methods, equipment and material or underpinning knowledge.

Education provider draws up the assessment criteria based on the general assessment criteria given in Chapter 9.3 for the optional modules for which they have not been prescribed in the qualification requirements.

## **7.5 DECIDING ON THE GRADE**

In addition to what the Act on Amending the Act on Vocational Education and Training and Decree on Amending the Decree on Vocational Education and Training stipulate (Act 601/2005, section 25 b, Decree 603/2005, section 11, Decree 488/2008, sections 10 and 13) stipulate, grades must be given on all the modules

in compliance with the qualification requirements, including the other optional modules and vocational competence enhancing modules included in the vocational studies (90 credits).

The grade to be awarded for a module is decided based on assessment of competence. If there have been several teachers assessing the competence, a decision is taken during an assessment discussion. A skills demonstration grade is mainly decided by teachers and working life representatives together according to the decision taken by the local board for vocational skills demonstrations. The grounds for assessment must always be recorded.

## 7.6 STORING ASSESSMENT MATERIAL

In addition to what the Decree on Amending the Decree on Vocational Education and Training (Decree 603/2005, section 11a) stipulates on storing assessment material, the grade given on a skills demonstration is stored as per target of assessment. If the skills demonstration taken by the student covers only a part of the module, the material on which the assessment of each part is based, must be stored so that it is possible to decide on a skills demonstration grade for the whole module.

## 7.7 REASSESSMENT AND IMPROVING THE GRADE

The Decree on Amending the Decree on Vocational Education and Training (Decree 603/2005, section 12) stipulates on reassessment and improving of grades.

## 7.8 RECTIFICATION OF ASSESSMENT

The Act on Amending the Act on Vocational Education and Training (Decree 601/2005, section 25c) stipulates on rectification of assessment.

## 7.9 CERTIFICATES

### **Qualification certificates**

A qualification certificate is an official document, whose contents are to follow the qualification requirements. The Decree on Amending the Decree on Vocational

Education and Training stipulates on awarding a qualification certificate (Decree 488/2008, section 13). A qualification certificate must be awarded in apprenticeship training arranged as vocational upper secondary education and training.

A qualification certificate is an entity that comprises a vocational upper secondary certificate and skills demonstration certificate. A vocational upper secondary certificate contains grades on all the modules the qualification comprises. In the vocational upper secondary certificate The Driver Certificate of Professional Competence (Driver CPC) certifying the initial qualification in transport sector is marked as: See skills demonstration certificate. Only free choice modules can be left without a grade at student's option. In the vocational upper secondary certificate the module grades are based on assessment of the skills demonstration and other competence. Skills demonstrations must be passed in order for a grade to be given on the module for the vocational upper secondary certificate.

Separate grades are given for the core subjects determined by the Government. Competence achieved by core subjects included in vocational modules is assessed as vocational module skills requirements.

The Final Project is assessed in connection with the modules it is included in. Its scope and name are marked in the vocational upper secondary certificate, no separate grade is given. As to on-the-job learning the vocational upper secondary certificate gives its extent but no separate grade is given, because the competence acquired during on-the-job learning is assessed with skills demonstrations.

Studies compensating for a module or competence acquired in some other way are marked in the student's vocational upper secondary certificate with their grades. If the grade scales differ the conversion table given in Chapter 7.3 is used. For a module recognised from a further or specialist vocational qualification the grade to be marked in the certificate is "approved" and a footnote is used to show that it was completed as a competence-based qualification, for which the qualification committee concerned has awarded a certificate.

Skills demonstrations covering a whole module given previously are marked with their grades and short descriptions in the skills demonstration certificate. The certificate is also to provide the name of the institute that performed the assessment.

If recognition of prior learning is done for studies in a qualification that has not included skills demonstrations, the skills demonstration certificate is to bear the name and scope of the module together with a footnote to state that prior learning has been recognised from a qualification that has not included skills demonstrations. When prior learning is recognised from further or specialist vocational qualifications, the skills demonstration certificate is to bear the name and scope of the qualification together with a footnote to state that prior learning has been recogn-

ised from further or specialist vocational qualification X, for which the qualification committee in question has awarded a certificate.

When vocational modules (90 credits) include core subjects or general upper secondary studies in compliance with Government resolution (216/2001), the skills demonstration certificate is to bear the footnote: "Student has included x credits of core subjects, which are not assessed with skills demonstrations".

The qualification certificate must show that it consists of the vocational upper secondary certificate and skills demonstration certificate. The qualification certificate must also bear the name of the education provider or the institute awarding the certificate or both. A vocational upper secondary certificate is signed by the education provider and a skills demonstration certificate by the chairman of the local board for vocational skills demonstrations (Decree 488/2008).

**Vocational upper secondary certificate is to provide the following information:**

- ◆ student's name and personal identity code
- ◆ name of qualification and its scope 120 credits /3 years
- ◆ name of study programme
- ◆ qualification title according to Ministry of Education Decree
- ◆ modules completed grouped into vocational modules (90 credits), core subjects (20 credits) and free choice modules (10 credits), their scope and grades
- ◆ name and scope of Final Project
- ◆ scope of on-the-job learning
- ◆ date and signatures
- ◆ stamp of education provider or school.

**Skills demonstration certificate is to provide the following information:**

- ◆ student's name and personal identity code
- ◆ name of qualification and its scope 120 credits /3 years
- ◆ name of study programme
- ◆ qualification title
- ◆ skills demonstrations completed by module (name and scope of module, short description of skills demonstration completed, name of skills demonstration venue, grade on skills demonstration or for special needs students a short description of student's vocational competence and skills shown in the skills demonstration.)
- ◆ date and signature (chairman of the local board for vocational skills demonstrations)
- ◆ stamp of education provider of school.



### **Qualification certificate is also to provide the following information:**

- ◆ contact information of the education provider or institute awarding the certificate
- ◆ name of education provider or institute if not mentioned earlier
- ◆ authorization to provide education the Ministry of Education has granted
- ◆ legislation the training is based on
- ◆ mention that training has been arranged in accordance with the qualification requirements decided by National Board of Education (date of regulation and register number)
- ◆ mention that the qualification is approved by the Ministry of Education (date and number of the Government Decree in force at the time training begins)
- ◆ prerequisites for admission and national level of qualification
- ◆ eligibility for further studies the qualification provides
- ◆ definition of scope of qualification, academic year and credit
- ◆ assessment scale
- ◆ special regulations related to practising the profession

### **Certificate on completed training**

Government Decree on Amending the Decree on Vocational Education and Training (Decree 488/2008, section 13) stipulates the contents of a certificate on training completed.

### **A certificate of completed training, qualification modules or skills demonstrations**

In addition to what the Government Decree on Amending the Decree on Vocational Education and Training (Decree 488/2008, section 13) stipulates on awarding certificates, a student is awarded a certificate on completed modules and studies, skills demonstrations and prior learning. In addition to the grades achieved the certificate must also list participation in modules that the student has not been given a grade yet as well as information of what the student must complete to receive a qualification certificate.

When a student enters working life after completing a module or modules, the certificate is to include a supplement describing the vocational competence achieved by completing the modules in question.

### **Certificate of resignation**

Government Decree on Amending the Decree on Vocational Education and Training (Decree 488/2008, section 13) stipulates on the contents of a certificate of resignation.

### **Qualification certificate or certificate supplement for international use**

Government Decree on Amending the Decree on Vocational Education and Training (Decree 488/2008, section 13) stipulates on issuing a qualification certificate or certificate supplement for international use.

### **The Driver Certificate of Professional Competence (Driver CPC) certifying the initial qualification in transport sector**

The instructions given in Ministry of Education letter (12.6.2007 No. 146/530/2007) are in force concerning Driver CPC certifying the initial qualification in transport sector.

## **7.10 ASSESSMENT IN SPECIAL EDUCATION**

The same principles are to be applied in assessing special needs students as to other students. If a student does not reach in a module the Satisfactory 1 level objectives set in the qualification requirements, the training can be adjusted. When the skills requirements or objectives of a qualification have been adjusted based on the Act on Vocational Education and Training 630/1998, sections 20 and 21 (2 and 3), an entry must be made in the certificate. A student must receive a qualification certificate even if qualification objectives have been adjusted.

A footnote must be made in the vocational upper secondary certificate as well as the skills demonstration certificate of adjusted skills requirements or objectives. Assessment must be implemented in proportion to the adjusted skills requirements or objectives, which means assessment criteria must be drawn up for them. The education provider draws up adjusted skills requirements or objectives for the module based on the Government Decree on Vocational Education and Training 811/1998, section 8. The grade scale must be the same as the one in general use. According to Section 10 of Government Decree on Amending the Decree on Vocational Educa-

tion and Training 603/2005, when training is arranged as special education, skills demonstrations can also be assessed verbally. A student must know that training completed in accordance to adjusted skills requirements or objectives may affect application for further studies and success in them.

If a student's competence level falls considerably short of the skills requirements and objectives set, a certificate of studies completed must be awarded instead of a qualification certificate. An appendix must be issued stating what the student knows best.

## 7.11 ASSESSING IMMIGRANT STUDENTS AND THOSE REPRESENTING DIFFERENT LANGUAGES AND CULTURES

The competence of immigrant students and those representing different languages and cultures is to be assessed in the same way as that of other students. Competence is to be assessed by using methods which allow assessing competence despite possible lacking language skills.

A student, whose mother tongue is other than the teaching language of the institute, must have, before taking a skills demonstration, such language skills that he/she understands the instructions and orders related to the work to be completed as the skills demonstration. The need for support must be identified and support activities based on the need must be planned in cooperation with the training institute, representatives of working life and the student. If necessary persons arranging and assessing a skills demonstration must receive instruction on how cultural factors affect communication between individuals. Persons arranging and assessing the skills demonstration must also be instructed to speak clearly when giving instructions.

### **Assessing mother tongue**

If Finnish or Swedish is not the student's mother tongue, his/her Finnish or Swedish skills must be assessed according to the objectives of Finnish or Swedish as second language, also in the case that he/she has not received separate Finnish or Swedish as second language tuition. If both the teacher and the student consider the student's Finnish or Swedish skills to be of the Finnish or Swedish, mother tongue level, competence must be assessed against Finnish or Swedish, mother tongue objectives. Vocational upper secondary certificate must state which objectives the assessment of competence is based on, however, on the scale 1–3. Student's individual study plan,

including assessment, can include both mother tongue studies above (see Chapter 8.4).

The Finnish or Swedish skills of student who use sign language are assessed based on the objectives set in Finnish or Swedish for sign language users.

### **Assessing second national language**

If the student has not studied Swedish or Finnish as a second national language, the vocational upper secondary certificate must state what he/she has studied instead. Teaching arrangements that affect assessment are determined in Chapter 8.4.

# 8

## OTHER REGULATIONS IN CURRICULUM-BASED VOCATIONAL EDUCATION AND TRAINING

### 8.1 GUIDANCE AND COUNSELLING AND PERSONAL STUDY PLAN

#### **Objectives for guidance and counselling**

The objective of guidance and counselling is that the student receives enough information on his/her education and training before it starts and during it. The student is to know the modules included in the qualification, the studies and the options available. Another objective is that the student knows how to act in the educational institute community, knows how to develop his/her learning and interaction skills and self-knowledge as well as to assess his/her own activities and productions. He/She is able to plan his/her studies, draw up a personal study plan together with the teacher and assume responsibility for the studies. He/She knows how to follow the accumulation of credits and search for help to plan his/her studies.

The student is able to make choices and decisions concerning studies and life career. He/She recognizes possible problems related to his/her studies and life situation and know where to find support in them. He/She knows how to use the student social services society offers as well as other counselling, advice and information services. Reaching the objectives is supported by the education provider's obligation to inform the guardians of a minor student on vocational education and the progress of the student's studies.

#### **Student's right to student counselling**

The qualification comprises a minimum of 1.5 credits of student counselling (Government resolution 213/1999). Counselling activities are to support the student comprehensively in the different phases of the studies. Every student has the right to receive personal and other student counselling. The student has the right to receive the support services he/she may need in studies or life situation changes.

## Arranging student counselling

The objective of student counselling is to promote educational, ethnic and gender equality. Objectives also include increasing students' well-being, preventing drop-outs, promoting employment and supporting application for further studies. Education provider must pay special attention the counselling of those students who have studying or learning difficulties (e.g. dyslexia), frequent absenteeism or life management difficulties.

As part of its curriculum the education provider is to draw up a student counselling plan, which determines the tasks and division of work for those involved in the counselling process. The plan serves as a development tool for the whole institute. It states how and what kind of support a student receives by those involved in counselling. The plan presents how cooperation with different education providers has been arranged in order that the student can choose modules and studies from different study programmes and qualifications as well as plan completing more than one qualification. It also determines other cooperation outside specialists and guardians. Student welfare plan is part of the counselling plan.

All the teachers of the institute and other persons responsible for counselling take part in the counselling process. Student counsellor has the main responsibility for arranging student counselling as well as for planning and implementing the counselling entity. A teacher's task is to guide and motivate the student to complete the qualification and planning the studies. The teacher's task is also to help the student find his/her strengths and develop his/her learning skills.

Student counselling is arranged as studies related, personal, group counselling and other guidance. Student receives counselling to support his/her studies and to make choices so that he/she is able to plan the contents and structure of his/her studies in accordance with his/her resources. Student counselling promotes students' community spirit throughout the training. The students' studies and well-being are monitored and supported in cooperation with the guardians.

The education provider is to inform the pupils of comprehensive school, their guardians, student counsellors and teachers of vocational education and training and how to apply. The education provider is to direct informing and counselling especially to those young people who have not managed to secure a training place after completed basic education and to their guardians.

The education provider is to develop its career and recruitment services in cooperation with business life and employment services as well as to promote and support students finding employment and getting access to further studies.

## Individual study plan

An individual study plan supports a student's career planning and develops his/her skills in self-assessment. It is based on the student planning his/her own studies, individual choices, progressing in studies and assessing learning. A student is instructed in drawing up an individual study plan and monitoring its implementation. It is a plan the student is committed and motivated to implement throughout the training.

An individual study plan is drawn up through negotiation by the student, teacher or teachers and student counsellor when needed. The plan determines the learning objectives, completing the studies, methods used and timing together with assessment of the studies. When drawing up the plan the different learning styles are considered. Possible factors that prevent learning are recognized and the student's self-direction and vocational growth are supported.

The implementation of individual study plan and the progress of studies are monitored and if necessary the student is given remedial teaching. The student and teachers assess the possible barriers to implementing the individual study plan. The student is guided to make decisions concerning his/her learning as well as redefine and change the plan as studies advance if necessary.

An individual study plan comprises the student's individual choices, advancing in studies, assessment of learning, recognition and validation of prior learning, on-the-job learning places and times together with skills demonstrations.

## 8.2 ON-THE-JOB LEARNING AND WORKING SAFETY

In addition to what the Decree on Vocational Education and Training (Decree 811/1998, section 5, Government Decree Amendment 603/2005, sections 3 and 5) stipulate, the following is to be considered in on-the-job learning:

On-the-job learning is part of vocational education and training. It is a mode of arranging vocational education and training, in which qualification objectives are learnt at a workplace. On-the-job learning is objective oriented, guided and assessed training that takes place in a genuine working environment. On-the-job learning periods must be sufficiently long and versatile from the point of view of mastering the profession. Only in exceptional cases a student can complete on-the-job learning at a training institution in a practice enterprise or with similar arrangements.

Cooperation between workplaces and the education provider ensures that on-the-job learning and other training corresponds with the working life, is of quality and up-to-date. The education provider's responsibility is to take care that all the

partners in the area have the same view on arranging on-the-job learning. The education provider must see that the student receives sufficient counselling and training during on-the-job learning and that the teacher and other staff members have the resources to cooperate with working life. The education provider and teachers must together with working and business life ensure the quality of on-the-job learning so that the student achieves the skills requirements given in the qualification requirements.

The education provider is responsible for the implementation of on-the-job learning. Implementation includes planning, student counselling and assessment. The education provider must also see to the teachers' working life competence and training as well as training workplace instructors. At the workplace special attention is paid to guiding the student and giving feedback.

Usually the student does not sign a contract of employment with the employer for an on-the-job learning period and he/she is not paid wages or a salary. During an on-the-job learning period a student is entitled to receiving student financial aid and student social benefits in accordance with separate instructions. When on-the-job learning is arranged abroad, local regulations are also taken into consideration.

In addition to what the Act on Vocational Education and Training (Act 630/1998, sections 19 and 28) and the working safety regulations in force stipulate, the following is to be considered in working safety questions:

The agreement on training and skills demonstrations to be arranged at the workplace in connection with practical work assignments is to include the responsibilities related to safety, injuries and damages and insurances. Before starting the work, the employer and education provider ensure together that the student has the resources to do the work in question safely and without risking his/her health and by following the instructions given.

The regulations concerning the employer according to the Occupational Safety and Health Act Section 4 (1) are applied to the education provider when the work takes place at the institute or otherwise in the way determined by the education provider.

Student assessment during on-the-job learning period is described in Chapter 7.

### 8.3 VOCATIONAL SPECIAL EDUCATION

For equality in education to come true each student must have equal opportunities to pursue vocational studies and find employment after training and assume the role of an independent citizen in society disregarding their different learning capabilities.



The vocational education and training of a special needs student must be arranged in view of the equality principle primarily in ordinary vocational institutes in the same study groups with other students. Education and training can also be provided partly or completely in special groups. Vocational special education institutions primarily provide training for severely handicapped as well as preparatory and rehabilitative training and counselling. They are also to offer expert help to other training institutions. Vocational special education can also be provided as apprenticeship training.

Students who are in need of special teaching arrangements or student social services due to disability, illness, delayed development, emotional disorder or some other reason must receive special education. It ensures learning that is based on individual resources, self development and growth as a person. If necessary other support services and rehabilitation in cooperation with rehabilitation service suppliers are added to special education.

The education provider determines the principles of special education: objectives, implementation, teaching methods, support and special services, expert services, social partners and responsibilities. The institution must reserve sufficient resources for special education. Promoting special needs students' learning is everyone's task in the institution.

Need for special education must be determined based on the Act on Vocational Education and Training Section 20 and qualification requirements for each student individually. Reaching the objectives must be supported with the help of an individually designed and guided learning process and different support activities.

### **Individual educational plan (IEP)**

A written individual educational plan (IEP) must always be drawn up for a student in need of special education (Act 630/1998, section 20). The plan is to include (Decree 811/1998, section 8)

- ◆ qualification to be completed
- ◆ qualification requirements used in teaching
- ◆ scope of qualification
- ◆ individual study plan drawn up for the student
- ◆ special teaching and student social services the student receives
- ◆ other personal services and support activities as well as
- ◆ criteria for special education

An IEP is to be drawn up together with the student, when necessary his/her guardian, representatives of previous school as well as teachers and student service specialists.

If vocational skills requirements have been adjusted, the personal study plan is to include a personal curriculum, which determines the student's learning objectives. They are based on the requirements of the qualification the student aim for. Vocational special education must be planned so that the student reaches as extensively as possible the same competence as in other vocational education. The objectives can be adjusted according to the student's resources either so that all the learning objectives are adjusted or only those of one or more modules. Teaching must focus on supporting the student's strengths so that he/she is ensured good opportunities to find employment. Special attention must be paid to achieving working confidence during on-the-job learning periods. The student must be explained how he/she can get the special services required after the training has been completed.

Student's progress must be monitored during training and the personal objectives and support activities changed as needed. Regulations on assessing special needs students are to be found in Chapter 7.10.

## 8.4 TEACHING IMMIGRANTS AND REPRESENTATIVES OF DIFFERENT LANGUAGE AND CULTURAL GROUPS

### General

The skills requirements for immigrant students and students belonging to other language and culture groups, such as Saami, Romany and sign language students, are in the main the same as for other students. The requirements for vocational upper secondary qualification are applied to teaching.

Students, whose mother tongue is other than the language of teaching at the institution, must receive support particularly in language studies and through special teaching arrangements. If necessary the students' background, like mother tongue, culture and the language skills developing during the training, must be observed. Teaching arrangements are made to support students' own lingual identity along side with the majority language and culture. The education provider's curriculum is to comprise the implementation immigrants' and other language and culture group students' teaching arrangements.

## **Immigrants**

In this connection immigrants are taken to mean students who have moved to Finland or were born in Finland but have an immigrant background. If necessary the reason for immigration, time spent in the country and developing Finnish skills are taken into consideration in teaching. The studies support the student's growth into an active and balanced member of both his/her own language and cultural community and Finnish society.

## **Saami speakers**

Saami language teaching started in basic education is continued when possible in vocational education and training. Saami language training can be provided in Northern Sami, Inari Sami and Skolt Sami. Saami can be studied as mother tongue although education would not otherwise be provided in Saami.

## **Romanies**

Teaching Romanies is done taking in to consideration the position of Finnish Romanies as an ethnic and cultural minority. Romany culture is considered in teaching arrangements. Romany language training is arranged as possible in cooperation with other education providers.

## **Sign language users**

The requirements for vocational upper secondary qualification are applied to sign language culture and communication in sign language students' teaching and learning. Finnish or Swedish are used as reading and writing language alongside with sign language. Sign language teaching is planned so that it is possible for the student to act with an interpreter. Sign language users and hearing-impaired students' opportunities to communicate naturally are to be taken into consideration in learning environments.

## Language teaching arrangements

The following teaching arrangements, which are in compliance with Government resolution (VnP 213/1999), can be applied to immigrants', Saami and Romany speakers' and sign language users' language studies (mother tongue, second national language, foreign language), if their mother tongue is other than Finnish or Swedish.

### *Mother tongue*

If the student's mother tongue is other than Finnish or Swedish, the education provider can divide the compulsory modules in mother tongue and second national language differently from the stipulations of the Act on Vocational Education Section 12 (2).

The credits reserved for mother tongue and second national language (4 + 1 = 5 credits) can be combined and divided flexibly in possible student's own mother tongue studies, Finnish or Swedish as second language studies and second national language studies. Finnish or Swedish as second language means a language that has been learnt after the mother tongue in a Finnish language environment. A separate Finnish or Swedish for sign language user module (Chapter 5) has been drawn up for sign language students.

Students can study Finnish or Swedish either

- 1) in accordance with Finnish or Swedish as second language objectives (Chapter 5) or
- 2) in accordance with Mother tongue, Finnish or Swedish objectives (Chapter 5), if the student's Finnish or Swedish skills are assessed to be of mother tongue level.

A student, whose Finnish or Swedish skills are not of mother tongue level on all the area of language skills, studies according to Finnish or Swedish as second language objectives and contents. His/Her Finnish or Swedish language competence is assessed according to these objectives whether or not the education provider has offered Finnish or Swedish as second language teaching. Education provider can offer and student's study plan may include both of the above mentioned studies. A student can change in the middle of his/her Finnish or Swedish as second language studies over to studying Finnish or Swedish according to Mother tongue, Finnish or Swedish objectives.

A student must be offered his/her mother tongue studies when possible. As a mother tongue as student can choose to study also Romany, sign language or some other mother tongue (Act 630/1998, section 12 (3)). The immigrants' own mother tongue objectives are given in Chapter 5. A student can study his/her own mother tongue in accordance with the objectives of either Mother tongue, own mother tongue for foreign students (4 credits) or Foreign language (2 credits) or as free choice studies.

If a student studies his/her mother tongue according to the objectives of Own mother tongue for foreign students, his/her studies are to include Finnish or Swedish language studies.

### *Second national language*

The students' second national language (Swedish or Finnish) teaching is arranged in accordance with the objectives of second national language taking into consideration the level of the students' language skills.

Foreign students can also replace second national language studies with their own mother tongue or Finnish or Swedish language studies (5 credits), Chapter 5. If necessary the teaching can be arranged as basics in second national language depending on the needs of the student and the vocational field.

### *Foreign language*

A student's studies must also include foreign language studies. The foreign language of a student, whose mother tongue is other than Finnish or Swedish, can also be his/her mother tongue.

## **8.5 APPRENTICESHIP TRAINING**

Apprenticeship training is regulated by the stipulations of the Act on Vocational Education and Training (Act 630/1998, sections 8 and 17), the Decree on Vocational Education and Training (Decree 811/1998, sections 6 and 7) and the Act on the Financing of the Provision of Education and Culture (635/1998).

The valid qualification requirements (national core curriculum and qualification Requirements of competence-based qualifications) are applied to apprenticeship training arranged as curriculum-based vocational education and training.

The education provider issues a qualification certificate in accordance with the qualification requirements for a qualification taken in vocational upper secondary education in accordance with the regulations of Chapter 7.9.

## 8.6 COOPERATION BETWEEN HOME AND EDUCATIONAL INSTITUTION

In addition to what the Act on Vocational Education and Training (Act 630/1998, sections 5 and 14) stipulates, the following is to be observed when arranging cooperation between home and educational institution:

In education and training offered to the young the education provider and the educational institution must take the initiative and maintain cooperation with a student's parents or guardians. Cooperation between home and institution is arranged so that it enhances student's independence and responsibility, advances studies and offers support in matters related to student's health, security and wellbeing. The individual needs of special needs students and students with different language and cultural backgrounds are to be taken into consideration in the cooperation.

The education provider and the guardians must cooperate in student counselling both during and at the end of studies. Counselling must support the students' transition to working life or further studies and enhance students' life management skills.

The part of the curriculum dealing with cooperation between home and educational institution is to be drawn up in cooperation with the authorities in charge of the implementation of social and healthcare in the home municipality of the educational institution.

## 8.7 STUDENT WELFARE SERVICES

In addition to what the Act on Vocational Education and Training (Act 630/1998, Sections 14, 28 and 37 a) stipulates on implementation of student welfare services and student's right to a safe learning environment, the following is to be observed:

The objective of student welfare services is to create a safe and healthy learning environment and promote the community spirit of the educational institution, wellbeing and pleasantness. The objective is to support the student and maintain the institution community's ability to function in situations threatening physical and psychological safety. Student welfare services are to promote early recognition of learning difficulties and other problems and prevent school drop-outs. In the case of minor students the education provider must cooperate with the guardians.

The education provider is to ensure the achievement of the objectives of student welfare services by issuing in its curriculum operating instructions which promote students' health and safety together with prevention and early recognition of different problems. Education provider is to issue instructions on attending to such activities of the educational institution as student's participation in training, monitoring the progress of studies and staying at the school dormitory. Preventive instructions are to be issued on smoking, use of substances, school bullying and disturbing. The education provider must have a crisis plan and instructions in case of disturbing behaviour, violence, injuries, accidents and deaths.

The education provider must monitor the outcome of the student welfare services and take necessary action. Students are to be encouraged to take part in and contribute to promoting wellbeing in their own school community. All those working with the students in the school community are responsible for student welfare services. The duties of multi-professional student welfare staff include coordinating and developing student welfare services.

The part in the curriculum dealing with student welfare services is to be drawn up in cooperation with the authorities and other parties attending to the implementation of social and welfare matters in the municipality or municipalities the institution operates in. The stipulations of the Primary Health Care Act and the Child Welfare Act must be considered when arranging student welfare services. At the same time arrangements must be made to ensure social inclusion and expert services in student welfare and psycho-social support. Student feedback is to be used in developing the services.

During vocational education and training a student must be informed on the implementation of student counselling and welfare services, the services of different administrative sectors, local support networks and qualification specific health requirements. In addition to the student also the guardian of a minor student must be informed of matters related to occupational safety and labour protection during on-the-job learning.

The education provider must see that the students know the school rules that are in force in the institution. The student's own responsibility must be emphasized in the observance of the school rules and other instructions.

## 9.1 DESCRIPTION AND BASIC VALUES OF THE INFORMATION AND COMMUNICATIONS TECHNOLOGY SECTOR

### Description of the field

Information and communications technology (ICT) is a permanent part of the modern information society and plays an increasingly vital role in the operations of organisations and the everyday life of people.

ICT is used in organisations to provide various services. Information is collected, stored, edited, presented, communicated and analysed. The operations of companies and organisations are facilitated and guided with software, which requires IT skills. There are also companies whose entire business is based on ICT, such as application rental and server capacity hosting as well as various virtual services and communities, in addition to the industry providing experiences via digital media. ICT enables faster and more efficient communication for the authorities and provides improved services for citizens in the form of e-services. E-business is a growing field that is expanding into new industries and product groups. ICT is used for enhancing the productivity of work and operations, improving competitiveness and promoting sustainable development, and is also expected to bring added value and new innovations in these areas.

Tasks in the ICT sector vary. Those working in the field can perform e.g. specification, planning, implementation, testing and maintaining tasks of information systems and software. Deployment of information system services and the related training and guidance are typical service support tasks. Employers in this industry also include companies that focus on hardware and software consultation as well as database and information network services. In addition, the sector provides possibilities to engage in many types of B2B sales operations and specialty retail. Professionals in the field also provide ICT services and helpdesk support for domestic households. Data security and data privacy skills play a key role in jobs in this field.

Jobs in the ICT sector are provided by e.g. ICT service companies, consultation companies, data security companies, network operators and wholesale and



retail vendors. Jobs can also be found with companies that specialise in hardware installation, maintaining and repair. Almost all organisations need experts in this field to manage their information systems, provide service support and engage in information service and administrative tasks.

The employment prospects of the industry are good because increasing globalisation and networking along with the development of ICT constantly create new job opportunities in the field. Labour needs are influenced by e.g. the market situation and economic fluctuations in the short term. In the long run, influential factors include technological development, new innovations, changes in customer needs and the emergence of new markets, which in turn enable the establishment of new companies and entrepreneurship. The significance of ICT skills will continue to grow throughout society and in all lines of business.

An expert working in the rapidly developing and diverse ICT sector must demonstrate a will to constantly develop his/her professional skills. In addition to technical know-how and problem-solving skills, tasks in this field require the ability to work on a project and in a team, internal entrepreneurship, communication and interaction skills, economic thinking and an understanding of business models, as well as the ability to work in cooperation with customers. The international nature of operations and virtual networking set certain requirements for language skills, knowledge of different cultures, interaction skills and electronic communication.

## **Basic values of the field**

A person working in the ICT sector values the professional skills in the field. He/She is ready to constantly develop himself/herself and his/her work. He/She is able to use his/her own initiative as well as act responsibly, reliably, cooperatively and flexibly. He/She adopts a tolerant and equal approach towards the diverse attitudes of colleagues and customers while working in a calm and friendly manner in interactive situations.

He/She complies with the right ethical principles while working responsibly and fairly in his/her work community. He/She follows given agreements and observes professional confidentiality and discretion. He/She is familiar with the legislation pertaining to data security and privacy and works accordingly. He/She is aware of copyrights and respects them at work.

He/She is familiar with the principles of sustainable development and works accordingly. He/She possesses the will to understand and respect different cultures and strives to promote intercultural cooperation.

## 9.2 QUALIFICATION SPECIFIC HEALTH REQUIREMENTS IN VOCATIONAL UPPER-SECONDARY EDUCATION AND TRAINING

Guidelines for the admission of students into training leading to a vocational upper secondary qualification are set in Section 27 of the Act on Vocational Education and Training. A person, whose illness or injury is likely to prevent him/her participating in training, cannot be admitted as a student. Student admission into vocational education can only be limited when the illness, objectively assessed, prevents studies or would endanger the safety of the student or others. The practical problems an illness or injury causes to studies must primarily be solved using teaching arrangements and student welfare services.

An applicant is to provide education provider such information on his/her health condition as the admission process requires. Education provider must also make sure that the health condition of the person admitted is such that he/she can also cope with on-the-job learning in a way that working in the tasks in the field and achieving the qualification skills requirements presuppose.

From the point of view of a student's legal protection it is justified that he/she is not admitted to a study programme the future working tasks of which his/her health would not allow. When deciding who is admitted the various tasks related to the professions and work must be taken into consideration. It is possible that there are modules in a qualification that presuppose different health requirements and thus allow a student to make individual decisions on how to complete the training.

For student admission to have the best possible result from the student's point of view, education provider must inform applicants of the requirements of the vocational upper secondary qualification or vocational field as well as of possible health risks in the Guide for Applicants and during student admission process. Applicant's own description of his/her health condition or treatment of illness is most often enough in the admission situation.

If the legislation on or special features of the training sector or qualification in question require a person admitted into the institution to present a doctor's certificate on his/her health, it is enough that the certificate states the student is suitable for the vocational field. Student admission is conditional until such a doctor's certificate has been presented.

Student's illness or injury must not stop his/her studies or lead to a rash decision to change of profession or training sector. The practical problems an illness or injury causes in training must primarily be solved using individual teaching arrangements and personalisation that meet the student's needs. Student counselling, student support, instructing on the use of ergonomic work methods and aids facilitate

completing the training. When a student falls ill or is injured cooperation between student welfare services and occupational health care at workplaces is absolutely necessary.

In all situations where personal data specified as sensitive in the Personal Data Act, such as information on the student's state of health, the education and training provider must observe care and good information processing practice required in the provisions.

Due to the diversity of the ICT sector, even major limitations do not necessarily pose an obstacle for working in the field. The mental and physical needs and characteristics of the student can be taken into consideration when planning his/her future career.

### 9.3 VOCATIONAL SKILLS REQUIREMENTS, TARGETS OF ASSESSMENT AND GENERAL ASSESSMENT CRITERIA

Determining the skills requirements as well as the targets of assessment and general assessment criteria are to help education providers when drawing up curricula for modules that are not determined in the national core curriculum.

Vocational modules are formed according to and named after work entities. Skills requirements are described as concrete work outputs. Assessment criteria are determined for three levels: Satisfactory 1, Good 2 and Excellent 3.

The following criteria are meant as guidelines so that they are applied according to the objectives of core subjects and the skills requirements set for vocational modules. The criteria proposed are always portrayed against the requirements of the qualification module in question, which is to say that the work described in the criteria always means work contained in the module concerned.

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA ON A GENERAL LEVEL		
	Satisfactory 1	Good 2	Excellent 3
1. Mastering the work process	Student		
Planning one's own work, self-assessment of performance and development of one's activities.	plans his/her work but need instruction in new situation or working environment changes	plans his/her own work	plans independently work assignments and tasks he/she is responsible for
	assesses the success of his/her performance	assesses the success of his/her performance while working and copes with new and changing situations without help	assesses the success of his/her performance, justifies the assessment and assesses and develops his/her work methods and environment

Performance, independence and responsibility of work package.	performs in familiar work assignments	considers the work entity while working (e-g- where to start, where to finish and what tools and equipment to use etc.)	considers the work entity in the working environment and his/her own work as part of it
	work so that the outcome can be accepted as fulfilling the work plan and quality objectives	works so that the outcome includes some of the special requirements of the work assignment	works according to the special requirements of the workplace so that the outcome is in accordance with the objectives set
	need occasional guidance to advance in work phases	advances fluently from one work phase to another	advances systematically and fluently in his/her work adjusting it to other activities in the working environment
	follows working instructions, working hours, agreements and negotiates on discrepancies	completes given assignments independently and takes care of his/her assignments from start to finish and assumes responsibility for his/her own part of the work	spontaneously completes duties other than those assigned in his/her area of responsibility

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA ON A GENERAL LEVEL		
	Satisfactory 1	Good 2	Excellent 3
<b>2. Mastering the work method, equipment and material</b>	Student		
Choice and use of work method, equipment and materials that suit the assignment and work environment.	uses the most common work methods, equipment and materials related to his/her work in repeating work situations, but needs some instruction (procedures, equipment and materials are defined by qualification module)	uses work methods, equipment and materials related to his/her work independently in work situations	chooses the most suitable work methods, equipment and materials and uses them skilfully in various work situations



Interaction and cooperation Actions in interactive situations and cooperative abilities.	abides given instructions on interactive situations in his/her own learning and working environment	considers the situation in his/her learning and working community in different interactive situations	expresses him-/herself clearly and brings forth different viewpoints constructively
	completes the work assignments he/she is responsible for but needs instruction from time to time	completes the work assignments he/she is responsible for spontaneously	acts responsibly, cooperatively and equally with different people as a member of a work community and group
	works in a familiar work community and group and asks for help from the others when needed	works with different people in a work community and group	supports and helps others and also takes into account the next work phase and employee in his/her work
Vocational ethics Activities based on vocational ethics, professional value basis and the agreements made.	abides the ethical instructions and timetables given	abides the given ethical instructions, agreements and decrees as well as timetables	acts according to the values in the work community, ethical instructions, agreements and regulations in variable situations and also keeps to timetables
Health, safety and ability to function Actions that maintain health and safe operations and maintain the ability to function.	abides the given safety instructions and does not endanger him- /herself or others	abides the work community's instructions and takes into account the safety of the members of the work community and working environment	abides the work community's instructions and takes into account the safety of the members of the work community and working environment
	ensures safety in accordance with instructions	ensures safety	ensures safety and reports on dangers and risks he/she observes
	uses safely protective equipment, tools and work methods as instructed	uses protective equipment, tools and work methods safely	uses protective equipment, tools and work methods safely
	works ergonomically in most situations	works ergonomically	uses safe, variable work methods, which do not cause excessive workload while taking ergonomics into account
Are included in the objectives and assessment criteria of the core subjects , Psychological education (1 credit) and Health education (1 credit). Respective skills requirements and assessment criteria for health, safety and ability to function are drawn up for every vocational qualification if needed.			

TARGETS OF ASSESSMENT	ASSESSMENT CRITERIA ON A GENERAL LEVEL		
4. b) Rest of the key competences for lifelong learning	Satisfactory 1	Good 2	Excellent 3
Initiative and entrepreneurship target-oriented, economic and productive operations and self management.	Student Are included in the objectives and assessment criteria of the core subjects , social, business and labour-market subjects (1 credit) and also in the skills requirements and assessment criteria of the entrepreneurship part that is included in the skills requirements of the vocational modules. In addition, when necessary, skills requirements and assessment criteria for the vocational modules of each qualification have been drawn up.		
Sustainable development Observing technological, economic, social and cultural principles.	works and acts taking sustainable development into account under instruction	works and acts taking sustainable development into account	works and acts independently taking sustainable development into account and takes up development needs
Aesthetics Taking aesthetics into account while working	works according to the aesthetic principles, pleasantness of work environment and other factors that affect the appearance of the end result under instruction	works according to the aesthetic principles, pleasantness of work environment and other factors that affect the appearance of the end result	makes versatile use of aesthetic principles in the field – works to promote the pleasantness of the working environment and other factors that impact the appearance of the end result
Communication and media skills Objective recognition, observation and interpretation of the media products and use of media and information technology	Are included in the objectives and assessment criteria of the core subjects Mother tongue (4 credits). In addition, when necessary, skills requirements and assessment criteria for communication and media skills in compliance with the requirements of each vocational field have been drawn up.		
Mathematics and natural sciences Numeracy required at work and knowledge of the laws of physics needed	Are included in the objectives and assessment criteria of the core subjects Mathematics (3 credits), Physics and chemistry (2 credits). In addition, skills requirements and assessment criteria for mathematics and natural sciences in compliance with the requirements of each vocational field have been drawn up.		

<p>Technology and information technology Use of technology and information technology in the vocational</p>	<p>uses common technical and information technical systems that are needed in his/her profession, in repeating work situations, but sometimes needs instruction</p>	<p>uses common technical and information technical systems that are needed in repeating work situations</p>	<p>uses common technical and information technical systems that are needed in repeating work situations variedly</p>
<p>field and taking into account the benefits, limitations and risks of</p>	<p>chooses the machinery and equipment needed, under instruction and recognises the risks</p>	<p>chooses the machinery and equipment needed and recognises the risks</p>	<p>chooses the machinery and equipment needed independently and recognises the limitations and risks</p>
<p>technology</p>	<p>Information technology is included in the objectives and assessment criteria of core subjects (social, business and labour-market subjects). In addition, skills requirements and assessment criteria for technology and information technology in compliance with the requirements of each vocational field have been drawn up.</p>		
<p>Active citizenship and different cultures Participating in community activities and decision making with people from different backgrounds and observing the rights and obligations as an employee and citizen and abiding equality regulations.</p>	<p>Are included in the objectives and assessment criteria of the core subjects social, business and labour-market subjects (1 credit) and also Mother tongue (4 credits). In addition, when necessary, the skills requirements and assessment criteria for this key skill have been drawn up considering the skills requirements of each qualification.</p>		



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