

Revised Learning Outcomes in Landscape Construction: Adaptation to the European Qualification Framework (EQF)



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- *Starfsafli – starfsmennt Samtaka atvinnulífsins og Floabandalagsins*
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Preface

The following document describes an adaptation of a new step-by-step curriculum in Landscape Construction (LC) prepared by the NordLand2011 project group to the standards of the European Qualification Framework (EQF). It is a result of several meetings and preparatory work during the years 2009-2011.

The aim of the curriculum is to provide a frame for acquiring competence, knowledge and skills necessary to fulfill national requirements for the trade of LC. Of course deviations exist between countries due to somewhat different law frames but the basic trade requirements should be similar between the Nordic countries.

The studies are divided in two major subjects of LC, Construction and Maintenance. Each subject is then divided into four (4) steps. To complete a full trade degree in LC the student is expected to finish both subjects, in all eight (8) steps.

This document describes first the learning outcomes defined as necessary for each step. Each step is then briefly described in terms of competence, knowledge and skills.

The step-by-step curriculum approach is written with learning outcomes as a priority, it is designed to be equally suitable for formal as informal studies. The curriculum is therefore thought as a framework for adult life-long-learning vocational education and training (VET) and VET in the formal school system but would differ in approach to the student, utilising their background, experience, age and previous formal training. Therefore, the teaching methods would differ as well as the amount of time spent on lectures and practical exercises.

Definitions

- “Qualification” means a formal outcome of an assessment and validation process obtained by a competent body
- “National qualifications framework” means an instrument for the classification of qualifications
- “Learning outcomes” means statements of what a learner knows, understands and is able to do on completion of a learning process, which are defined in terms of knowledge, skills and competence;
- “Knowledge” means the outcome of the assimilation of information through learning.
- “Skills” means the ability to apply knowledge and use know-how to complete tasks and solve problems.
- “Competence” means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. In the context of the EQF, competence is described in terms of responsibility and autonomy.

Source: *The European Qualifications Framework for Lifelong Learning. (EQF) Luxembourg: Office for Official Publications of the European Communities , 2008. ISBN 978-92-79-08474-4 DOI 10.2766/1435. European Communities, 2008. http://ec.europa.eu/education/pub/pdf/general/eqf/broch_en.pdf*

Descriptors defining levels – Skills



Skills	
In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).	
Level 1	• basic skills required to carry out simple tasks
Level 2	• basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools
Level 3	• a range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information
Level 4	• a range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study

Descriptors defining levels - Knowledge



Knowledge	
In the context of EQF, knowledge is described as theoretical and/or factual.	
Level 1	• basic general knowledge
Level 2	• basic factual knowledge of a field of work or study
Level 3	• knowledge of facts, principles, processes and general concepts, in a field of work or study
Level 4	• factual and theoretical knowledge in broad contexts within a field of work or study

Descriptors defining levels – Competence



Competence	
In the context of EQF, competence is described in terms of responsibility and autonomy.	
Level 1	• work or study under direct supervision in a structured context
Level 2	• work or study under supervision with some autonomy
Level 3	• work or study with autonomy in a structured context
Level 4	• work or study with autonomy in a broad context

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EQF levels simplified

EQF level	NQF level (IS)	Typical studies/ competence level
1	1	Untrained general worker with primary school certificate
2	1	Somewhat trained general worker with primary school certificate
3	2	1st-2nd year secondary school level or equiv. training
4	3	3rd-4th year secondary school level or equiv. training
5	4	5th year secondary school level or equiv. training Intermediate levels, f.ex. contractors education/training
6	5	1st level University or Tech. Univ. (BSc)
7	6	2nd level University or Tech. Univ. (MSc)
8	7	3rd level University or Tech. Univ. (PhD)

Trade: Landscape Construction	
Subject: Construction	Subject: Maintenance
Step 1: Basic stone material and planting	Step 1: Basic area maintenance
Step 2: Base course, basic work management, pavements etc.	Step 2: Soil and fertilizers, weed control etc.
Step 3: Pre-fabricated stones, drain, garden sections etc.	Step 3: Pruning, tree maintenance etc.
Step 4: Natural stones, storm water, renovations, bids etc.	Step 4: Maintenance plans for fields and sections

To acquire a full trade certificate all steps in both subjects must be completed plus additional certified work experience and/or final tests, country specific.

Construction: Learning outcomes – a brief overview

1st step construction

- Acknowledge the special tasks of stone material handling
- Able to build a base course under foreman's supervision
- Know and follow safety regulations
- Lay out a simple pavement with sawing/fitting
- Conduct a basic land survey (topography assessment) tasks
- Know bedding materials for green bedding
- Able to fetch and transport living material e.g. wooden species, herbaceous material and pre-fabricated turf
- Understands basic principles planting
- Understands basic principles in ecological landscaping
- Know of sustainable development

2nd step construction

- Name and recognize the base course for pavements and know what materials are suitable for each layer incl. permeability and water consumption (storm water management)
- Use geotextiles and insulations
- Show and implement a knowledge of the major items in a landscape drawing from a LA
- Know and conduct a simple topographic land survey
- Conduct a simple work supervision (foreman)
- Daily maintain and legally conduct small LC utility vehicles and hand tools
- Know of bedding material incl. root space, water consumption and air flow
- Conduct most regular pavement constructions
- Know how to build and prepare bedding for turf and turfing, for different grass types
- Recognize construction-related risks

Construction: Learning outcomes – a brief overview II

3rd step Construction

- Use various pre-fabricated concrete units (steps, curb stones etc.). Lay out steps of pre-fabricated concrete.
- Know and use step formulas
- Show and implement an extensive knowledge of base courses for various garden constructions
- Know bedding materials for green bedding and how to influence it incl. ecological balance, root growth and natural soil demands of plants
- Know basic principles of accessibility
- (Know of basic calculations for CO₂ binding in green areas) Know principles and meaning of vegetation in CO₂ binding on green areas.
- Know the meaning of wetlands in biodiversity
- Know basics of waste management and relevant environmental issues
- Recognize the importance of drain constructions and hydraulic movements in soils of turfs and flowerbeds
- Recognize and identify major construction sections of a garden in terms of topography and conduct basic topographical work
- Show and implement a knowledge of the major items in a complete landscape drawing from a Landscape Architect
- Know sustainable development
- Know of the capacity and properties of nitrogen binding plants
- Understand principles of permeable and semipermeable surfaces and structures
- Know of the principle of water cycle
- Know meaning of machine maintenance in saving energy and service life
- Know principles in eco-friendly landscaping
- Understands the role of plants in improvement of air quality in cities
- Can evaluate and mitigate environmental risks and disadvantages caused by own practical work
- Be aware of risks involved in soil transport/import

4th step Construction

- Lay out natural stone materials in a plane and in a simple wall construction
- Know of the specific requirements and standards in play area construction

- Know of standards and regulations (country-specific) for accessibility
- Use basic methods in wall constructions
- Know of storm water systems in general
- Build simple storm water systems: infiltration systems, green roofs, wetlands
- Know properties of plants in water purification
- Know the principles of roof garden and green walls construction
- Recognise , on-site visually analyze (shovel analysis)and prepare and treat (simple treatment) different soil types on site (eco-bedding)
- Bed and plant street trees
- Compose a bid for a small construction. Compose a simple business plan esp. an operation plan
- Conduct a simple observation on a stone construction and explain them, orally and in a written form with photos and text
- Know various surface techniques and materials in surface finishing
- Thoroughly know the different garden construction sections and implement skills in working with the sections and the interactions/connections between them.
- Renovate old gardens from a drawing and know major principles in old garden maintenance (renovate/renew/replace)
- Understands the meaning of choosing plants from a perspective of biodiversity (landraces, wild flowers)
- Know of properties of plants regarding effects on people, environment and fauna
- Be aware of the carbon footprint of materials and be able to compare them from the perspective of life cycle
- Evaluate weather conditions and implement it to work planning and scheduling
- Understand plant use from biotope perspective
- Can utilize and use nitrogen binding plants
- Know properties of grass species specially regarding wearing, draught tolerance and speed of growth
- Know permeable and semipermeable surfaces and structures
- Understand plant choices regarding resistance against diseases and pests.
- Know serious plant diseases and pests
- Able to select cover material taking into account species and surroundings
- Know principles and local regulations of recycling
- Able to minimise waste and reuse useful materials

- Can compare environmental friendliness of fuels and lubricants
- Can plan own work in an energy efficient way

Maintenance: Learning outcomes – a brief overview I

1st step Maintenance – The student should be able to:

- green area maintenance and handling standards
- green area and road area maintenance standards
- ornamental plant identification and maintenance requirements
- how to use natural plants in green areas
- the specific requirements and standards in traffic and street greenery maintenance
- funeral event practices
- different cemetery area types
- funeral monuments legislation and grave yard standards
- economical and efficient working, and environmental aspects in work.
- maintenance cost structure (materials, machinery and personal costs)
- fetch and transport living material e.g. wooden species, herbaceous material and pre-fabricated turf
- basic planting
- preparing pre-fabricated turf
- recognize about ten common trees and shrubs
- recognize the prerequisites of a good tree maintenance
- recognize the interactions between constructions and vegetation
- safety
- recognize the use of machinery and tools
- know sustainable development

Maintenance: Learning outcomes – a brief overview II

2nd step Maintenance – The student should be able to:

- Know the basic composition of soils (country-specific) and the impact of different main types of fertilizers
- Distribute fertilizers correctly
- Know major principles of maintenance standards
- Know use of irrigation equipment's
- Know major principles of fertilization, liming and soil improvement measures
- Know basics of urban forest maintenance
- Know maintenance (mowing, harvesting) in natural parks
- Know basics of lawn areas (golf, football) maintenance
- Know professional vocabulary.
- Conduct lawn edging by hand and mechanically
- Use and daily maintenance common machinery and tools
- Recognize maintenance-related risks
- Legally conduct small LC utility vehicles - cfr. previous skills.
- Recognize at least 50 plant species
- Use plant identification keys
- Know and work with major plant protection agents and major parasites/diseases in gardens (country-specific)
- Know mechanical and eco-friendly weed control methods and praxis
- Work with and cooperate with other employees
- Adapt to changing work conditions
- Know sustainable development

Maintenance: Learning outcomes – a brief overview III

3rd step Maintenance – The student should be able to:

- Conduct pruning on minor trees and shrubs in gardens
- Conduct a simple work supervision (foreman) - cfr. previous skills
- Conduct simple form cuts
- Know basic principles of tree condition and tree care
- Conduct tree treatments (stem damages, removal of the branches, canopy management)
- Do timbering
- Organize and conduct turf grass management
- Pass traffic area safety exam (country specific)
- Pass exam of weed prevention
- Advocate site development and site logistics with ref. to field methods and management
- Pass work safety exam (country specific)
- Evaluate and improve soil conditions , incl. interpretation soil analysis for major elements
- Recognize irrigation need
- Calculate fertilizer dosage pr. m^2/m and conduct simple fertilizer plans
- Recognize about 75 major plants and identify them with accuracy
- Know the basics of organic farming principles and ecological gardening (composting, ecological protection against pests and diseases)
- Know basic principles of accessibility
- Know extensively the principles in large scale turf grass management, such as grass cutting and related major variables (cutting height, fertilizers, weeds, usage etc.)
- Know sustainable development
- Know common invasive species and proper measures against them based on local circumstances
- Know principles of composting and nutrient cycle
- Recognize weeds and know their mode of their reproduction. Know risks involved in soil transport/import.
- Understand the importance of machine maintenance in energy efficiency and life cycle management
- Know waste separation

- Knows eco-friendly chemicals, fuels and lubricants
- Can evaluate and mitigate environmental risks and disadvantages caused by own practical work

Maintenance: Learning outcomes – a brief overview IV

4th step Maintenance – The student should be able to:

- Thoroughly know the different garden construction sections and implement skills in working with the sections and the interactions/connections between them.
- Identify major lines in garden art design and how they interact with the work of the professional landscape constructor
- Develop a simple maintenance plan
- Maintain various sport fields according to maintenance plans
- Renovate old gardens from a drawing and know major principles in old garden maintenance (renovate/renew/replace)
- Recognize the bidding procedure and major variables therein
- Know major principles of irrigation systems and should be able to maintain and use them correctly and exploit storm water in irrigation
- Conduct a simple observation on green area constructions and explain them, orally and in a written form with photos and text
- Know vegetation management in limited growth conditions (planting bowls, boxes, pots)
- Visually recognize lack of fertilizers and growth failures, know basic analysis methods, can take samples and send them to analysis and fertilize on basis of the analysis
- Evaluate the conditions of various cover materials and make suggestion of maintenance thereof
- Understand principles in maintenance of permeable and semipermeable surfaces
- Work on-site and cooperate with other employees.
- Work in a customer-oriented way in different situations.
- Use basic professional terminology and vocabulary in another language.
- Time and cost calculation of different basic maintenance and construction tasks
- Conduct graveyard maintenance
- Maintain stone and gravel surface, weed control, gap filling and surface cleaning, incl. biological methods
- Know how to maintain permeability of paved surface
- Know the specific requirements and standards in play area maintenance
- Know the specific requirements and standards in park maintenance
- Know storm water management techniques
- Know green roofs and green walls management and maintenance techniques

- Know principles of maintenance of multispecies, layered and diverse vegetation areas and understand their value regarding biodiversity.
- In addition to identify plants also know their properties
- Identify common plant communities and know the basis of plant ecology
- Identify major plant diseases and pests and know prevention principles and biological options
- Evaluate weather conditions and implement it to work planning and scheduling
- Promote recycling of nutrients in maintenance (composting etc.)

Learning Outcomes: Construction Step 1 and 2

	EQF level 2	EQF level 3	EQF level 4
Competence	<p>Recognize the general tasks and projects of stone constructions.</p> <p>Recognize materials for base course for pavements.</p> <p>Recognize construction-related risks</p> <p>Recognize the work procedure of simple paving.</p> <p>Recognize bedding materials, incl. root space and air flow.</p> <p>Recognize how to transport living plant material.</p> <p>Recognize how to conduct basic planting.</p> <p>Recognize principles in ecological landscaping.</p> <p>Recognize principles in sustainable development.</p>	<p>Recognize base course materials for permeable pavements.</p> <p>Recognize geotextiles and insulation materials.</p> <p>Recognize basic items in a landscape drawing (work drawing).</p> <p>Recognize the principles of work supervision (foreman).</p> <p>Recognize principles in daily maintaining a small LC utility vehicle and tools.</p> <p>Recognize about legal permission to use small machinery and tools.</p> <p>Recognize most regular pavements constructions.</p> <p>Know and conduct a simple topographic land survey</p> <p>Identify the main tasks and technical solutions regarding pre-fabricated steps, walls and curb stones.</p> <p>Perform and manage simple stone constructions, including finishing, according to drawing.</p> <p>Apply safety procedures for major tasks.</p>	<p>Manage daily projects in small / medium sized tasks, and understand the role of the manager, share information and conduct necessary supervision</p> <p>Display basic understanding and implementation of the major principles of sustainable development</p>
Knowledge	<p>Knowledge of general pavement units and surface materials.</p> <p>Know materials for base course for pavements.</p> <p>Know of basic safety regulations.</p> <p>Know how to lay simple pavements.</p> <p>Know about bedding materials, incl. root space and air flow.</p> <p>Know risks in plant transport.</p> <p>Basic knowledge on planting.</p> <p>Know about ecological landscaping.</p> <p>Know about sustainable development.</p>	<p>Know materials for base course for permeable pavements.</p> <p>Know geotextiles and insulation materials.</p> <p>Know basic items in a landscape drawing (work drawing).</p> <p>Know the principles of work supervision (foreman).</p> <p>Know principles in daily maintaining a small LC utility vehicle and tools.</p> <p>Know about legal permission to use small machinery and tools.</p> <p>Know how to conduct most regular pavements constructions.</p> <p>Understand topographic points (elevation, geometric heights)</p> <p>Know safety procedures applicable to major tasks</p> <p>Identify the main small machinery and tools, care and maintenance, in the landscape construction industry.</p>	<p>Read and understand simple work drawings and project descriptions and be able to construct according to them.</p> <p>Know of basic managerial duties and know of basic empowerment and motivation theories.</p> <p>Know major principles of sustainable development</p>
Skills	<p>Able to lay out concrete pavement units in a simple construction.</p> <p>Able to choose base course materials for pavements.</p> <p>Able to make simple safety percussions.</p> <p>Able to conduct simple paving.</p> <p>Able to choose bedding materials for green areas.</p> <p>Can fetch and transport living materials.</p> <p>Able to conduct basic planting.</p> <p>Recognize principles of ecological landscaping.</p> <p>Recognize principles of sustainable development.</p>	<p>Able to choose base course materials for permeable pavements.</p> <p>Able to choose geotextiles and insulation materials.</p> <p>Able to work according to a landscape drawing (work drawing).</p> <p>Able to supervise other in simple tasks.</p> <p>Able to maintain small LC utility vehicle and tools on daily bases.</p> <p>Able to conduct most regular pavements constructions.</p> <p>Perform simple measurements with levelling instruments</p> <p>Set up a laser levelling instrument and show how it works, basically.</p>	<p>Describe, orally and partly in practice, how a simple task could be performed in a step-wise, informative manner.</p> <p>Describe how several difficult attitudes amongst workers and customers can be handled.</p> <p>Explain principles of selected examples of sustainable and non-sustainable constructions</p>

Learning Outcomes: Construction Step 3

	EQF level 3	EQF level 4
Comp.	<p>Use correctly various pre-fabricated concrete units (steps, curb stones etc.) Lay out steps of pre-fabricated concrete Know and use step formulas Show and implement an extensive knowledge of base courses for various garden constructions Use correctly green bedding materials and prevent weed growth using different covers. Know basics of waste management and relevant environmental issues Perform a natural stone material construction in a plane Perform a natural stone material construction in a simple wall construction Perform daily machine maintenance. Plan own work regarding environmental risks and disadvantages. <i>Separate waste according to local regulations.</i> <i>To report from plant diseases and pests in a proper way</i> Recognize environmental risks and disadvantages caused by own practical work Recognize risks involved in soil transport/import</p>	<p>Conduct a basic CO2 binding calculation in green area. Recognize principles and meaning of vegetation in CO2 binding on green areas. Recognize the use of wetlands in biodiversity Recognize the capacity and properties of nitrogen binding plants. Recognize the principles of permeable and semipermeable surfaces and structures Recognize the principle of water cycle Understand the meaning of machine maintenance in saving energy and service life Recognize principles in eco-friendly landscaping Recognize the role of plants in improvement of air quality in cities Use proper drain mechanisms in constructions. Recognize and identify major construction sections of a garden in terms of topography and conduct basic topographical work Show and implement a knowledge of the major items in a complete landscape drawing from a LA Envisage sustainable development Can construct a small wetland Can construct permeable and semipermeable surfaces. Can choose an ecological method to make constructions. Understand principles in ecological landscaping. Can plan work regarding environmental impacts.</p>
Knowl.	<p>Know various types of pre-fabricated concrete units (steps, curb stones etc.) Know procedures in step-making and know of step formulas. Know extensively the different components in base courses. Know green bedding materials incl. ecol. balance, root growth and soil demands of plants and know different covering materials Know regulations and principles of accessibility. Know basic waste management (composting, chemical handling etc.), rules, when to use, alternative uses etc., alternative weed control etc. Acquire basic ecological knowledge, about food webs, biodiversity, cycles in nature etc. Understand meaning of machines.in energy saving and lifecycle. Know typical environmental risks and disadvantages. Know properties of fuels and lubricants from environmental point of view. Know principles and local regulations of recycling. Recognize most dangerous plant diseases and pests and understand the importance of recognition in preventing them. Knows how to evaluate and mitigate environmental risks and disadvantages caused by own practical work Be aware of risks involved in soil transport/import</p>	<p>Know the principles for a basic CO2 calculation. Know principles and meaning of vegetation in CO2 binding on green areas. Know the meaning of wetlands in biodiversity Know of the capacity and properties of nitrogen binding plants. Know the principles of permeable and semipermeable surfaces and structures Know of the principle of water cycle Know meaning of machine maintenance in saving energy and service life Know principles in eco-friendly landscaping Understands the role of plants in improvement of air quality in cities Know the importance of drain constructions and hydraulic movements in soils for diff. plants. Know of major construction sections and the principles of topographical work. Know of all common drawing components in a landscape drawing. Know the major principles of sustainable development Understand importance in wetlands. Know of principles in constructions and materials used in them. Know of environmental impacts of landscaping.</p>

<p>Skills</p>	<p>Perform step-construction of various pre-fabricated concrete units showing ability to use step formulas correctly and with correct base course Construct various base courses Construct green beds for different plants and choose suitable covering material. Describe conversion of a non-accessible garden to an accessible one, orally and in practice Display basic ecological reasoning and thinking. Can use tools, materials and methods in maintenance work. Know environmentally good working methods. Recognize waste materials and can separate them Can report plant disease and pest observations properly Able to evaluate and mitigate environmental risks and disadvantages caused by own practical work Able to recognize risks involved in soil transport/import</p>	<p>Perform basic CO2 calculations. Able to choose relevant vegetation in CO2 binding on green areas. Able to use methods in building wetlands for biodiversity Able to choose and use nitrogen binding plants in relevant cases. Able to choose between permeable and semipermeable surfaces and structures Able to explain the principle of water cycle Able to choose necessary machine maintenance in saving energy and service life Can evaluate principles in eco-friendly landscaping Can evaluate the role of plants in improvement of air quality in cities Construct different drain mechanisms. Correctly identify major construction sections and operate topographical measuring devices. Draw a basic and simple garden plan. Can principles in constructing wetlands. Can use right working methods and materials in constructing hard surfaces. Can evaluate ecological impacts of different methods of implementation based on the starting point Can work in an environmentally sound way</p>
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Learning Outcomes: Construction Step 4

	EQF level 3	EQF level 4
<p>Comp.</p>	<p>Recognize methods to lay out natural stone material in a simple wall construction Use basic methods in natural stone wall constructions Prepare and treat different soil types (eco-bedding) and can recognize and make analyses (also with shovel) on site. Bed and plant street trees Use correctly various surface finishing materials and techniques Recognize the specific requirements and standards in play area construction Recognize of storm water systems in general Use right methods in building simple storm water systems: infiltration systems, green roofs, wetlands Recognize properties of plants in water purification Recognise , on-site visually analyze (shovel analysis) and prepare and treat (simple treatment) different soil types on site (eco-bedding) Recognise properties of plants regarding effects on people, environment and fauna Evaluate weather conditions and implement it to work planning and scheduling Recognize and use nitrogen binding plants</p>	<p>Recognize the specific requirements and standards in play area construction Recognizes standards and regulations (country-specific) for accessibility Compose a bid for a small construction. Compose a simple business plan esp. an operation plan. Conduct a simple observation on a stone construction and explain them, orally and in a written form with photos and text. Use proper drain mechanisms in constructions Thoroughly know the different garden construction sections and implement skills in working with the sections and the interactions/connections between them. Renovate old gardens from a drawing and know major principles in old garden maintenance (renovate/renew/replace) Build simple roof garden and green walls under supervision Can use plants species regarding their meaning in ecosystem services and biodiversity. Can interpret the use of plants from plans(specifications) Can choose the most environmentally sound material based on the current knowledge. Can pay attention in the changes in weather conditions in planning work and timetables.</p>

	<p>Recognize different grass species specially regarding wearing, draught tolerance and speed of growth Recognize permeable and semipermeable surfaces and structures Recognize serious plant diseases and pests Recognize principles and local regulations of recycling Recognize methods to minimise waste and reuse useful materials</p>	<p>Can construct lawns with minimal need of maintenance. Can prevent birth of waste and recycle suitable materials. Can plan work based on energy efficiency. Recognize how to choose plants from a perspective of biodiversity (landraces, wild flowers) Recognize how to use plants from biotope perspective Recognize the carbon footprint of materials and be able to compare them from the perspective of life cycle Understands plant choices regarding resistance against diseases and pests. Recognizes different cover materials taking into account species and surroundings Can compare environmental friendliness of fuels and lubricants Can plan own work in an energy efficient way</p>
<p>Knowl.</p>	<p>Know different materials and methods to lay out natural stones in simple wall construction Know the relevant difference between natural and pre-fabricated stones Know major principles in natural stone wall constructions and base layers for walls Know green bedding materials incl. ecol. balance, root growth and soil demands of plants Know major principles in street trees bedding and planting Know principles of various surface finishing materials and techniques Know of the specific requirements and standards in play area construction Know of storm water systems in general Know how to build simple storm water systems: infiltration systems, green roofs, wetlands Know properties of plants in water purification Know how to , on-site visually analyze (shovel analysis) and prepare and treat (simple treatment) different soil types on site (eco-bedding) Know of properties of plants regarding effects on people, environment and fauna Evaluate weather conditions and implement it to work planning and scheduling Knows nitrogen binding plants Knows properties of grass species specially regarding wearing, draught tolerance and speed of growth Know permeable and semipermeable surfaces and structures Knows about serious plant diseases and pests Knows principles and local regulations of recycling Know methods to minimise waste and reuse useful materials</p>	<p>Know of the specific requirements and standards in play area construction Knows of standards and regulations (country-specific) for accessibility Know of the major laws, standards, principles and major cost components in a bid for a small construction Know of different stone constructions, trends, materials, purpose and use Know major trends in garden art history and connect them to existing local stone constructions Know the importance of drain constructions and hydraulic movements in soils for diff. plants Know the principles of storm water systems in general + knows the principles of water cycle Know the principles of roof garden and green walls construction Knows the meaning of plant choose regarding ecosystem services and biodiversity(knows natural plants and landraces) Knows the most common plants for landscaping and their properties including ecological landscaping. Knows the carbon footprint of different materials Knows the impact of weather conditions in daily work. Knows the most common grass varieties and their properties in the duration of draught, wear resistance, need of nutrients and the speed of growth. Knows the lifecycle in materials used in landscaping and possibilities in recycling. Understands the meaning of choosing plants from a perspective of biodiversity (landraces, wild flowers) Know of the carbon footprint of materials and be able to compare them from the perspective of life cycle</p>

		<p>Know how to use plants from biotope perspective</p> <p>Knows about plants resistance against diseases and pests.</p> <p>Able to select cover material taking into account species and surroundings</p> <p>Knows how to choose different cover materials taking into account species and surroundings</p> <p>Knows how to compare environmental friendliness of fuels and lubricants</p> <p>Knows how to plan own work in an energy efficient way</p>
<p>Skills</p>	<p>Able to use basic methods in natural material wall constructions</p> <p>Construct green beds for different plants, incl. eco-bedding and street trees</p> <p>Use various surface techniques and materials in surface finishing.</p> <p>Display basic ecological reasoning and thinking.</p> <p>Able to use the specific requirements and standards in play area construction</p> <p>Can recognize of storm water systems in general</p> <p>Able to build simple storm water systems: infiltration systems, green roofs, wetlands</p> <p>Display abilities to use plants in water purification</p> <p>Able to , on-site visually analyze (shovel analysis) and prepare and treat (simple treatment) different soil types on site (eco-bedding)</p> <p>Able to influence properties of plants regarding effects on people, environment and fauna</p> <p>Evaluate weather conditions and implement it to work planning and scheduling</p> <p>Is able to choose and use nitrogen binding plants</p> <p>Is able to choose different grass species specially regarding wearing, draught tolerance and speed of growth</p> <p>Able to build permeable and semipermeable surfaces and structures</p> <p>Is able to choose methods against serious plant diseases and pests</p> <p>Can use principles and local regulations of recycling</p> <p>Able to use different methods to minimise waste and reuse useful materials</p>	<p>Able to construct in play areas based on specific requirements and standards</p> <p>Can perform and construct based on standards and regulations (country-specific) for accessibility</p> <p>Perform simple calculations in a spreadsheet and how cost components affect the total bid</p> <p>Display verbal and written abilities with computer and associated software</p> <p>Display abilities to record and visualize (photograph, basic and perspective drawing) some selected stone constructions</p> <p>Display abilities to renovate old gardens</p> <p>Construct different drain mechanisms</p> <p>Can build simple storm water systems(soil infiltration systems, green roofs, wetlands)</p> <p>Display skills to build simple roof garden and green walls under supervision</p> <p>Can recognize plant species, which have importance regarding ecosystem services and biodiversity.</p> <p>Can recognize the most common plants in landscaping.</p> <p>Can compare materials regarding their life cycle.</p> <p>Can seek and find information from weather forecasts and its impact in planning of work and timetables.</p> <p>Can choose plants due to their purpose and minimizing the need of maintenance</p> <p>Can recognize materials with recycling values and utilize them in constructions.</p> <p>Can choose working methods based on energy efficiency.</p> <p>Is able to choose plants from a perspective of biodiversity (landraces, wild flowers)</p> <p>Be aware of the carbon footprint of materials and be able to compare them from the perspective of life cycle</p> <p>Is able to choose plants from biotope perspective</p> <p>Can choose plants with resistance against diseases and pests.</p> <p>Able to select cover material taking into account species and surroundings</p> <p>Able to choose environmental friendly fuels and lubricants</p> <p>Able to plan own work in an energy efficient way</p>

Learning Outcomes: Maintenance Step 1

	EQF level 2	EQF level 3	EQF level 4
Comp.	<p>Perform basic green area maintenance and handling standards</p> <p>Perform basic green area and road area maintenance standards</p> <p>Recognize x ornamental plants and their maintenance requirements</p> <p>Recognize about ten common trees and shrubs</p> <p>Correct use of the specific requirements and standards in traffic and street greenery maintenance</p> <p>Correct handling of funeral event practices (and step 2)</p> <p>Know different cemetery area types (and step 2)</p> <p>Funeral monuments legislation and grave yard standards (and step 2)</p>	<p>Usage of natural plants in green areas</p> <p>Economical and efficient working, and environmental aspects in work.</p> <p>Maintenance cost structure (materials, machinery and personal costs)</p> <p>Fetch and transport living material e.g. wooden species, herbaceous material and pre-fab green turf</p> <p>Perform correct planting</p> <p>Preparing pre-fab turf</p> <p>Recognize rational use of machinery and tools</p>	<p>Display basic understanding and implementation of the major principles of sustainable development</p> <p>Recognize the prerequisites of a good tree maintenance</p> <p>Recognize the interactions between constructions and vegetation safety</p>
Knowl.	<p>Know relevant maintenance and handling standards for green areas and road area maintenance standards</p> <p>Know tree, shrub and ornamental plant traits and requirements for a specific number of plants and basic procedures in plant keys use</p> <p>Know regulations and standards on traffic standards and street greenery maintenance</p> <p>Know funeral practice rules and customs</p> <p>Know the difference and characteristics of cemetery areas, funeral monuments legislation and grave yard standards.</p>	<p>Know practical and esthetical suitable plant species for green areas</p> <p>Know environmental impact of work/construction</p> <p>Know health regulations regarding work/work environment</p> <p>Know major variables and cost items in work proceed.</p> <p>Know main hazards in plant transport (plant/human)</p> <p>Know main principles for successful planting</p> <p>Know main principles for successful pre-fab turf planting</p> <p>Know the difference between rational and possible use of machinery and tools.</p>	<p>Know major principles of sustainable development</p> <p>Know major principles of good tree maintenance</p> <p>Know basic laws and causal interactions between constructions and vegetation safety</p>
Skills	<p>Perform, with stepwise skill levels, certain green area maintenance schemes and justify them according to standards.</p> <p>Identify, on plant material, relevant plant traits in common ornamentals, trees and shrubs</p>	<p>Show proper planting and selection of nat. plants</p> <p>Prepare and securely transport plants (plant surplus)</p> <p>Show proper planting procedures and plant/turf treatment</p> <p>Rationally select and use machines and tools in different work tasks</p>	<p>Explain principles of selected examples of sustainable and non-sustainable constructions</p> <p>Conduct good tree maintenance</p> <p>Display understanding of the interactions construction/vegetation</p>

Learning Outcomes: Maintenance Step 2

	EQF level 2	EQF level 3	EQF level 4
Comp.	<p>Know at least 50 plant species and their requirements. Legally conduct small LC utility vehicles - cfr. previous skills</p>	<p>Distribute fertilizers correctly Prepare soils for turf and bedding Perform correct irrigation for different plants and soils Perform basic urban forest maintenance Maintain (mowing, harvesting) natural parks Perform basic lawn areas (golf, football) maintenance Participate in professional discussions. Conduct lawn edging by hand and mechanically Use and daily maintenance of common machinery and tools Perform mechanical and eco-friendly weed control and select proper tools for the tasks Recognize maintenance-related risks</p>	<p>Know the basic composition of soils (country-specific) and the impact of different main types of fertilizers Fertilize different plants in different soils correctly Recognize the importance of drain constructions and hydraulic movements in soils of turfs and flowerbeds Perform maintenance according to different standards Work and cooperate with other employees Adapt to changing work conditions Display ability in conducting sustainable development Recognize construction-related risks Work rationally and ecologically with major plant protection agents and major parasites/diseases in gardens (country-specific) Display ability in fertilization, liming and soil improvement measures</p>
Knowl.	<p>Know tree, shrub and ornamental plant traits and requirements for 50 plants and basic procedures in plant keys use. LC vehicles conductance knowledge</p>	<p>Know principles of soil preparation Know the use and function of irrigation equipment's Know basics of urban forest maintenance Know maintenance (mowing, harvesting) principles in natural parks. Know basics of lawn areas (golf, football) maintenance Know professional vocabulary Know principles of lawn edging Know daily machine maintenance procedure principles (causal rel.) Know mechanical eco-friendly weed control methods, their principles and theoretical application areas. Know of maintenance-related risks and basic steps in risk analysis</p>	<p>Know the basic composition of soils (country-specific) and the impact of different main types of fertilizers Know major principles of maintenance standards Know principles of conflict solutions and change management Know extended basics of sustainable development (comp. Step 1) Know major hazards combined with construction Know major plant protection agents and major parasites/diseases in gardens (country-specific) Know major principles of fertilization, liming and soil improvement measures</p>
Skills	<p>Acquire skills in identifying relevant plant traits in common ornamentals, trees and shrubs. Legally train LC vehicles use</p>	<p>Physically prepare soils for planting different plants Fertilize soils for different plant use and explain choices Assemble and troubleshoot irrigation equipment's Display proper basic urban forest maintenance Display proper maintenance (mowing and harvesting) in natural parks Display proper maintenance of lawn areas (golf, football etc.) Converse with professionals using professional terms Conduct, with stepwise difficulty levels, lawn edging by hand and mechanically Perform mechanical eco-friendly weed control with different tools. Identify maintenance-related risks and basic steps in risk analysis</p>	<p>Compile different fertilization and irrigation schemes Discuss different maintenance standards and plan accordingly Handle conflict solutions in different situations Visualize different scenarios in sustainable development, verbally and on a small scale Use different spraying and application methods in practice Practically handle problems with difficult soils (lime, fertilize, drain etc.)</p>

Learning Outcomes: Maintenance Step 3

	EQF level 3	EQF level 4
Comp.	<p>Conduct pruning on minor trees and shrubs in gardens</p> <p>Conduct simple form cuts</p> <p>Conduct correct simple tree care</p> <p>Do correct timbering</p> <p>Recognize irrigation need</p> <p>Recognize about 75 major plants and identify them with accuracy</p> <p>Know basic principles of accessibility</p> <p>Recognize common invasive species and can fight them based on local circumstances.</p> <p>Can utilize compost as soil improvement agent.</p> <p>Can fight weed and knows risks involved in soil transport/import.</p> <p>Recognize the importance of machine maintenance in energy efficiency and life cycle management</p> <p>Conduct separate waste</p> <p>Can plan own work based on environmental risks and disadvantages.</p> <p>Can separate waste according to local regulations.</p> <p>Can report dangerous plant diseases and pests in a proper way (requires initiation)</p> <p>Recognize eco-friendly chemicals, fuels and lubricants</p>	<p>Conduct a simple work supervision (foreman) - cfr. previous skills</p> <p>Conduct tree treatments (stem damages, removal of the branches, canopy management)</p> <p>Organize and conduct turf grass management</p> <p>Pass traffic area safety exam (country specific)</p> <p>Pass exam of weed prevention</p> <p>Advocate site development and site logistics with ref. to field methods and management</p> <p>Pass work safety exam (country specific)</p> <p>Interpret fertility analysis for major elements</p> <p>Calculate fertilizer dosage pr. m²/m and conduct simple fertilizer plans</p> <p>Correctly apply organic farming principles and ecological gardening (composting, ecological protection against pests and diseases)</p> <p>Conduct large scale grass area cutting and related major variables (cutting height, fertilizers, weeds, usage etc.)</p> <p>Recognize and define the principles of sustainable development</p> <p>Evaluate and improve soil conditions, incl. interpretation soil analysis for major elements</p> <p>Evaluate and mitigate environmental risks and disadvantages caused by own practical work</p>
Knowl.	<p>Know the principles of minor pruning and form cuts</p> <p>Know basic principles of tree condition and tree care</p> <p>Know the methods and principles of timbering</p> <p>Know draught physiology principles</p> <p>Know of necessary actions and methods for irrigation</p> <p>Know plant keys principles</p> <p>Know accessibility principles</p> <p>Know common invasive species and how to fight them based on local circumstances.</p> <p>Know principles of composting and nutrient cycle.</p> <p>Know most common weeds and their ways of propagation, i.e. risks involved in soil transport/import.</p> <p>Understand the meaning of machines in saving energy and life cycle.</p> <p>Know waste separation</p> <p>Know most typical environmental risks and disadvantages.</p> <p>Know properties of fuels and lubricants from environmental point of view</p> <p>Know principles in recycling and local regulations.</p> <p>Know most dangerous plant diseases and pests and understands the importance of observation in fighting them.</p> <p>Knows eco-friendly chemicals, fuels and lubricants</p>	<p>Know principles of team work empowerment</p> <p>Know basic principles of tree physiology</p> <p>Know principles of grass physiology and turf grass construction layers and hydrology</p> <p>Know necessary traffic area and work safety principles</p> <p>Know principles of weed prevention</p> <p>Know principles of field work methods and management</p> <p>Know principles of fertilizer effects on plants and movement of elements in plants and soils, incl. calculations of fertilizer dosage and simple fertilizer plans.</p> <p>Know the basics of organic farming principles and ecological gardening (composting, ecological protection against pests and diseases)</p> <p>Know extensively the principles in large scale grass area cutting and related major variables (cutting height, fertilizers, weeds, usage etc.)</p> <p>Know the major principles of sustainable development</p> <p>Know of major principles of soil improvement, soil analysis and behavior of major elements in soils</p> <p>Knows how to evaluate and mitigate environmental risks and disadvantages caused by own practical work</p>

<p>Skills</p>	<p>Conduct minor pruning and form cuts Conduct simple tree care Conduct timbering Visual assessment of plant and soil water status Organize and conduct simple irrigation tasks Display ability to recognize 75 major plants with accuracy. Can identify invasive arts and choose a proper way to destroy them based on local circumstances. Can do composts. Identify most common weeds and know mechanical and chemical ways to fight them. Can do maintenance with proper tools, methods and materials. Able to separate waste Can work environmentally friendly. Identify waste materials and can separate them. Can report plant diseases and pests in a proper way. Able to use eco-friendly chemicals, fuels and lubricants</p>	<p>Show abilities to conduct a simple work supervision Display proper tree treatment methods Evaluate traffic and work area safety hazards in the field Display abilities to organize and manage turf grass areas Use different weed control methods Display field work management skills Display ability to evaluate soil conditions and make necessary improvements, if needed Display ability to calculate fertilizer dosage and make fertilizer plans Show abilities to work on organic farming principles, i.e. making compost and use ecological methods in soil improvements and weed control. Display abilities to explain and advise on sustainable developments. Can evaluate and mitigate environmental risks and disadvantages caused by own practical work</p>
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Learning Outcomes: Maintenance Step 4

	EQF level 3	EQF level 4
<p>Comp.</p>	<p>Know major principles of irrigation systems and be able to maintain and use them correctly and exploit storm water in irrigation Evaluate the conditions of various cover materials and make suggestion of maintenance thereof Conduct graveyard maintenance Maintain play areas Maintain parks Recognize principles of maintenance of multispecies, layered and diverse vegetation areas and understand their value regarding biodiversity. Identify plants and know their properties Identify common plant communities and know the basis of plant ecology Identify major plant diseases and pests and know prevention principles and biological options Evaluate weather conditions and implement it to work planning and scheduling</p>	<p>Thoroughly know the different garden construction sections and implement skills in working with the sections and the interactions/connections between them. Identify major lines in garden art design and how they interact with the work of the professional landscape constructor Develop a simple maintenance plan Maintain various sport fields according to maintenance plans Renovate old gardens from a drawing and know major principles in old garden maintenance (renovate/renew/replace) Recognize the bidding procedure and major variables therein Conduct a simple observation on green area constructions and explain them, orally and in a written form with photos and text Know vegetation management in limited growth conditions (planting bowls, boxes, pots) Visually recognize lack of fertilizers and growth failures, know basic analysis methods, can take samples and send them to analysis and fertilize on basis of the analysis Work on-site and cooperate with other employees. Work in a customer-oriented way in different situations. Use basic professional terminology and vocabulary in another language. Conduct time and cost calculation of different basic maintenance and construction tasks</p>

	<p>Promote recycling of nutrients in maintenance (composting etc.)</p>	<p>Maintain stone and gravel surface, weed control, gap filling and surface cleaning, incl. biological methods Recognize how to maintain permeability of paved surface and understand the principles in permeable and semipermeable surfaces. Maintain permeability of paved surface Conduct storm water management techniques Maintain roof gardens and green walls Can pay attention to special needs in multispecies, bedded and bio diverse planting areas. Can pay attention to factors impacting plant use in plant choices. Can maintain different plant communities. Can fight plant diseases and pests. Can pay attention to weather impacts in planning work and timetables. Can minimise loss of nutrients (composting, green waste) Can maintain plants regarding their meaning in ecosystem services and biodiversity.</p>
<p>Knowl.</p>	<p>Know major principles of irrigation systems and be able to maintain and use them correctly and exploit storm water in irrigation Know various cover materials and to be able to make suggestion of maintenance thereof Know graveyard maintenance Know the specific requirements and standards in play area maintenance Know the specific requirements and standards in park maintenance Know principles of maintenance of multispecies, layered and diverse vegetation areas and understand their value regarding biodiversity. Know relevant properties of plants Know common plant communities and know the basis of plant ecology Know of major plant diseases and pests and know prevention principles and biological options Recognize weather conditions and implement it to work planning and scheduling Know of recycling of nutrients in maintenance (composting etc.)</p>	<p>Thoroughly know the different garden construction sections and implement skills in working with the sections and the interactions/connections between them. Identify major lines in garden art design and how they interact with the work of the professional landscape constructor Develop a simple maintenance plan Maintain various sport fields according to maintenance plans Renovate old gardens from a drawing and know major principles in old garden maintenance (renovate/renew/replace) Recognize the bidding procedure and major variables therein Conduct a simple observation on green area constructions and explain them, orally and in a written form with photos and text Know vegetation management in limited growth conditions (planting bowls, boxes, pots) Know and recognize lack of fertilizers and growth failures, know basic analysis methods, can take samples and send them to analysis and fertilize on basis of the analysis Work on-site and cooperate with other employees. Work customer-oriented way in different situations. Use basic professional terminology and vocabulary in another language. Time and cost calculation of different basic maintenance and construction tasks Maintain stone and gravel surface, weed control, gap filling and surface cleaning, incl. biological methods Know how to maintain permeability of paved surface and understand the principles in permeable and semi-permeable surfaces. Know the principles of roof garden and green walls maintenance Know properties of multi-species, bedded and bio diverse planting areas. Know factors impacting plant use. Know basis of plant ecology and its impact to maintenance. Know most common plant diseases and pests and ways to fight them. Know impact of weather in daily work.</p>

		<p>Know principles in cycle of nutrients. Understand meaning of plants regarding their performance in ecosystem services and biodiversity</p>
<p>Skills</p>	<p>Be able to construct a simple irrigation system and exploit storm water in irrigation. Be able to choose various cover materials and maintain them accordingly. Be able to perform all basic graveyard maintenance. Identify specific requirements and standards in play area maintenance and conduct the right maintenance. Be able to identify the specific requirements and standards in park maintenance. Be able to work according to principles of maintenance of multispecies, layered and diverse vegetation areas and understand their value regarding biodiversity. Be able to identify plants and also know their properties Recognize common plant communities and know the basis of plant ecology Know how to identify major plant diseases and pests and know prevention principles and biological options Know how to recognize weather conditions and implement it to work planning and scheduling Know methods in recycling of nutrients in maintenance (composting etc.)</p>	<p>Show proper methods in constructing and managing irrigation systems. Show Proper technics in maintaining graveyards. Display the ability to identify specific requirements and standards in play area maintenance and conduct the right maintenance. Display the ability to use specific requirements and standards in park maintenance. Can recognize lack of fertilizers and growth failures, know basic analysis methods, can take samples and send them to analysis and fertilize on basis of the analysis Can choose proper working methods when maintaining permeable and semipermeable surfaces. Can maintain multispecies, bedded and bio diverse planting areas. Can choose plants according to local conditions. Can maintain plant communities. Identify most common plant diseases and pests and can fight them. Can find knowledge from weather forecasts and react on changes in weather when planning work and timetables. Can maintain with focus in cycle of nutrients. Identify plants with performance in ecosystem services and biodiversity</p>