

Erasmus+ - Project „BOQua digital”



Overview of professions of EU core training professions - changes, challenges and requirements due to digitisation

(Heike Arold and Project partner)

Project coordination

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Content

Introduction	5
1. Selected core training professions from the industrial-technical vocational field	6
Industrial mechanic	6
Plant (systems) mechanic	8
Construction mechanic	9
Production mechanic.....	11
Cutting machine operator	13
Tool mechanic.....	15
Mechatronics engineer	17
Machine and system operator – metal and plastics technology	19
Specialist for metal technology – construction technique	21
Electric system mechanic.....	22
Electronics technician for industrial technology.....	24
Electronics technician for automation technology	26
Electronics technician for devices and systems	28
Electronics technician for information and systems technology.....	30
2. Selected core training professions from the craft vocational field	33
Painter and Coating Technician	33
Baker	35
Installations and Building Technician (f/m/d).....	37
Hairdresser	39
Metal worker.....	41
Electrical installations engineer	43
Bricklayer	46
Bicycle mechanic.....	48
Motor vehicle engineer	50
Stonemason	53
Glazier	55
Floor layer	57
Butcher	59
Joiner	61
Carpenter	63
3. Selected core training professions from the commercial vocational field	66

Real-estate agent (sales person).....	66
Direct sales representative.....	68
Insurance sales agent.....	71
Store manager/commercial manager/sales manager.....	73
Cashier	75
Market researcher	77
Salesperson.....	80
Telemarketer (telephone sales representative)	82
Appraiser (auctioneer)	84
Financial analyst (investment analyst)	86
Bank teller	88
Gas station attendant.....	90
4. Selected core training professions from the ecological-green vocational field	92
Recycling Site Operator.....	92
Recycling Centre/Site Engineer	94
Green Engineer.....	96
Agricultural Operator	99
Land based Engineer	102
Horticulture Operator.....	105
General Farm Worker	108
Environmental Technician	111
Conservation Technician.....	115
Recycling/Waste Team Leader	118
Estate Worker.....	120
5. Selected core training professions from the nursing-medical vocational field	124
Assistant Pharmacy and Parapharmacy technician.....	124
Emergency health care technician.....	126
Nursing assistant (Expert in auxiliary nursery care)	127
Home care assistant	129
Hospital porter	130
Physiotherapist.....	132
Telecare operator	134
X-Ray Technician	136
Dental hygienist	138
Worker specialized in social inclusion.....	139
Technician in health documentation and management.....	141

Technician for auditory prosthetic.....	142
Dental Prosthesis Technician.....	144
Medical transport technician.....	146
Operator of Emergency Coordination Centres.....	147
Operator of Emergency Coordination Centres.....	149
Free Licence	151

The Overview of professions of EU core training professions with a focus on changes, challenges and requirements due to digitisation was created under the direction of the University of Education Schwäbisch Gmünd by Heike Arold and Prof. Dr. Lars Windelband and developed, discussed and worked out in cooperation with all project partners.

Following partners are mentioned:

	<p>Pädagogische Hochschule Schwäbisch Gmünd</p> <p>Germany</p>
 <p>Institut für Bildungsforschung der Wirtschaft</p>	<p>ibw – Österreichisches Institut für Bildungsforschung für Wirtschaft</p> <p>Austria</p>
<p>Nafarroako Gobernua  Gobierno de Navarra Hezkuntza Departamentua  Departamento de Educación</p>	<p>Department of Education – Comunidad Foral de Navarra</p> <p>Spain</p>
	<p>36.6 Competence Centre</p> <p>United Kingdom</p>
	<p>Šolski center Nova Gorica</p> <p>Slovenia</p>

Introduction

The increasing digitisation and new technologies not only contribute to changing work processes, but also face the employees with new vocational and operational challenges, regardless of the sector in which they work. In order to be able to cope with these, they have to renew or expand their knowledge, skills and abilities constantly. The changed requirements also affect the description of the various profession profiles and ensure that new professions are created. The knowledge of the changed profession profiles or new professions, the new requirements and challenges is elementary for young people at the interface to working life and also related to their career choice.

Only if potential trainees have knowledge of what previous school knowledge, necessary social skills and professional skills and interests they need for the training / an apprenticeship in different professions and how the professions are structured, which work processes/tasks await them, in which areas the activity takes place, they can make the right career choice. In order to choose the right profession, potential trainees should also know the future trends of a considered profession as well as the digitisation (new technologies) that will come into play. This is the only way they can weigh up whether they can do justice to a profession or not. Furthermore it should be prevented that young people quit their training / apprenticeship prematurely because of too less or wrong information. And it should be created an incentive to consider professions that have supposedly become unattractive as training professions or to get to know new professions.

The following overview of EU core training professions describes in particular the requirements (knowledge, skills and abilities as well as interests) that a potential trainee should have in order not to fail in the chosen training profession. Furthermore, the challenges, trends and digitisation topics are presented, so that they get a holistic picture of the described professions. Altogether, professions were identified for five vocational fields that are relevant and represented in all EU countries (industrial-technical, craft, commercial, ecological/green and health/care) and that are either represented in several countries or are newly created. The selection of the described professions was made by the respective project partners and related to one of the above-mentioned vocational fields. It should be noted that the type and duration of the described training profession as well as the entry requirements for the training can differ from country to country due to the different VET systems. Here it may be necessary for the respective beneficiaries (e.g. vocational advisors, specialists for vocational orientation etc.) of the overview to make adaptations to the overview.

In general, the overview was created in such a way that it can be adapted and supplemented at any time, both to include other vocational fields and individual professions. In order to have a quick overview of the required entry requirements (relevant school subjects), required social skills and skills for practicing a profession, these facts were also summarized in detailed Excel tables. While the following descriptions are detailed, young people in the process of career choice can also use the Excel tables to identify quickly and compare differences between the requirements in relation to the professions and make a pre-selection based on their knowledge and skills. These tables can also be easily supplemented with other professions. The filter function in Excel can also be used for a quick identification or to filter out which professions are suitable for the individual against the background of the expected trends and digitisation.

1. Selected core training professions from the industrial-technical vocational field

The professional profiles described below were identified by the project partner from Germany (see detailed table above) and described with a focus on the German VET system. In relation to the industrial-technical vocational field, both metal and electrical professions were identified that are affected by digitisation and may be known as training professions in other EU countries. With regard to the aspects of training duration, type of training and further training opportunities, the representations refer to Germany and may need to be adapted for other countries and their VET systems if necessary.

Industrial mechanic

Short job description: Industrial mechanics manufacture components and assemblies for machines and whole production plants as well as whole machines. They set them up, rebuild them, maintain and repair them. Their work also includes the monitoring and optimization of production processes.

Typical industries and operational areas: Industrial mechanics mainly work in industry and here in companies of all sectors of the economy. In detail, they are used in the areas of machine / plant construction, metalworking, automation technology, production technology, precision device construction, quality assurance / management and maintenance / repair.

Type of training: Industrial mechanic is a recognized apprenticeship that is assigned to the Chamber of Industry and Commerce. However, the profession is also trained in craft businesses that represent trades relevant to industry. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/training: 3,5 years (in Germany)

Required previous education / school leaving certificate: Good "General Certificate of Secondary Education"

Required school subjects, in which subjects potential trainees should perform well:

Mathematics, Technology, Technical handicraft lessons, Computer science, Physics,

Required social competencies in order to practice the profession: Care, Flexibility, Willingness to learn, Comprehension, Communication skills, Ability to deal with conflicts, Independent working

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Math understanding, Logical thinking, Dexterity, Linguistic thinking, Text comprehension, Linguistic comprehension

Interests: Cutting workpieces, setting up/starting up machines and systems, assembling assembly groups and identifying machine/system disturbance, programming NC machines, working systematically with checklists

Trends:

Increasing work with so-called Cobots (special robots) that work hand in hand with people and, thanks to built-in sensors, switch off at the slightest touch in order to avert danger from the person they are working with. They are increasingly used to support work that is problematic for people, such as ergonomically difficult, monotonous, difficult, dangerous or dirty tasks. They can be used as an interface between skilled workers and their various tasks.

Production processes are increasingly digitised, embedded systems and the Internet of Things are becoming more important. The operation and programming of machine tools and production machines are becoming more complex. Virtual Reality (VR) enables skilled workers, for example, to learn how to control new machine elements without losing material or tool wear. For that the real machine control is coupled with virtual machine models for the learning process.

Augmented -reality-technologies and voice assistants in the field of maintenance and repair contribute to making work easier, especially for drive and control systems in automobile, aircraft and shipbuilding industry or the plant / mechanical engineering. Tablets, Smartphones and data glasses are used here, which make virtual information such as repair instructions, setting values, etc., visible to the skilled workers. Or voice assistants who answer complex questions directly in the work process.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, industrial mechanics will have to deal with new technologies that will change their field of work due to the increasing digitisation. These include: 3D-printing, 3D-laser scanning, monitoring apps for production processes, augmented reality operations (e.g. maintenance by using data glasses / tablets), auto-ID (e.g. identification of components / measuring points for machine monitoring), embedded systems (e.g. checking of embedded systems in CNC machines), sensors (e.g. checking sensors), predictive maintenance (e.g. ongoing evaluation of machine / system data to minimize downtime), PLC (e.g. programmable logic controller when setting up machines), wearable technology (e.g. monitoring of CNC machines with data glasses), networked production systems (e.g. handling digital production systems).

Further training opportunities/courses: 1. In the field of production / manufacturing technology, machine / plant construction, CNC technology, chipping metal technology, 2. On the use of Cobots, 3. On the use of augmented reality technologies, 4. Further training to become an industrial foreman specialized in metal, 5. Further training to become a technician in mechanical engineering / industrial engineering, 6. Degree in mechanical engineering / production technology

Alternative professions: Production mechanic, mechatronics engineer, construction mechanic, precision mechanic, tool mechanic

Training abroad: Partly in Finland, Ireland, Italy, Malta, Austria, Spain and additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/kurzbeschreibung&dkz=29055>

<https://web.arbeitsagentur.de/berufetv/detailansicht/29055>

<https://planet-beruf.de/schuelerinnen/berufe-finden/a-z/ausbildungsberufe-i/industriemechaniker-in>

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/industriemechaniker.html#doc202716bodyText6>

<https://www.me-vermitteln.de/industriemechaniker-in>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/658658

https://www.youtube.com/results?search_query=Industriemechaniker

Plant (systems) mechanic

Short job description: Plant (systems) mechanics produce different components with CNC machines, among other things, which they assemble into assembly groups and which are required for various apparatus and industrial plants. They also manufacture components and assembly groups for pipe systems, i.e. they cut and cant sheet metals, lengthen and bend pipes. They repair entire plants and systems, expand them or rebuild them.

Typical industries and operational areas: Plant (systems) mechanics mainly work in the industry in companies that build pipelines, industrial plants, apparatus and containers. They are also employed in plumbing and utility companies, in the oil and gas production and refineries. Their working activities will mainly take place in production halls and on assembly building sites, which can also mean working outdoors.

Type of training: Plant (systems) mechanic is a recognized apprenticeship that is assigned to the Chamber of Industry and Commerce. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/training: 3,5 years (in Germany)

Required previous education / school leaving certificate: General Certificate of Secondary Education

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Craft lessons, Technical handicraft lessons, Computer science, Physics, National language

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Sense of responsibility, Ability to work under pressure, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Body control, Craft skills, Technical understanding, Math understanding, Logical thinking

Interests: Assembling plants, millimeter accurate working, assembly work, working for customers, planning/calculating/measuring plant components, testing/documenting in quality management

Trends:

Virtual Reality (VR) plays an increasing role in learning how to control new machine elements as part of training applications. Thereby the real machine control is coupled with virtual machine models or VR is used as part of e-learning programs.

Augmented Reality (AR) technology is increasingly being used when changing over machines in series production and when a virtual commissioning of systems takes place. VR technology supports machine operators in feeling heat, cold, vibrations and surface textures, for example.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, the plant (systems) mechanic will have to deal more with new technologies that will change his field of work due to the increasing digitisation. These include: 3D printing, actuators, monitoring apps for production processes, augmented reality operations (e.g. system maintenance by using data glasses or tablets),

auto-ID (e.g. identification of components/measuring points for machine monitoring), Cobots (e.g. for machine assembly), embedded systems (e.g. checking embedded systems in CNC-machines), real-time data systems (e.g. real-time optimisation and maintenance of production systems based on machine data), machine-to-machine communication (e.g. definition of interfaces for digitally networked machine systems), machine data acquisition (e.g. from CNC-machines), predictive maintenance (e.g. ongoing evaluation of machine/system data to minimize failures), sensors, PLC (e.g. programmable logic controller when setting up machines), wearable technology (e.g. monitoring CNC-machines with data glasses), networked production systems (e.g. handling digital production systems).

Further training opportunities/courses: 1. In the field of plant construction and container construction, sheet metal processing, welding/joining/cutting techniques 2. In the field of NC- and CNC-technology, 3. In the field of maintenance and repair, 4. Further training to become an industrial foreman specialized in metal, 5. Further training to become a technician in mechanical engineering 6. Degree in mechanical engineering / process engineering

Alternative professions: Plant (systems) mechanic for sanitary, heating and air conditioning technology, mechatronics technician for refrigeration technology, construction mechanic, metal worker with a specialization in construction technology or commercial vehicle construction

Training abroad: Partly in Finland, Ireland, Italy, Spain and additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/sucheAZ/kurzbeschreibung&dkz=29047&let=A>

<https://web.arbeitsagentur.de/berufetv/detailansicht/29047>

<https://planet-beruf.de/schuelerinnen/berufe-finden/a-z/ausbildungsberufe-a/anlagenmechaniker-in>

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/anlagenmechaniker.html>

<https://www.me-vermitteln.de/anlagenmechaniker-in>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/59595959

https://www.youtube.com/results?search_query=Anlagenmechaniker

Construction mechanic

Short job description: Construction mechanics produce constructions made of steel and metal (e.g. workshops, airport terminal buildings, ship hulls, elevators). They manufacture mechanically or manually components for the constructions, e.g. from profiles, pipes, sheets and assemble them to complete constructions. They weld, rivet, screw, bend and edge metal materials, among other things, and install construction-related control devices. And their activities also include maintenance work.

Typical industries and operational areas: Construction mechanics mainly work in the industry in companies that are active in steel and metal construction, mechanical and plant engineering as well as ship, rail vehicle and vehicle construction. They work both in workshops and during on-site assembly.

Type of training: Construction mechanic is a recognized apprenticeship that is assigned to the Chamber of Commerce and Industry. In addition, the profession is also trained in crafts, insofar as the training company is assigned to this. In Germany, dual training takes place in the company and at the vocational school

Duration of the apprenticeship/training: 3,5 years (in Germany)

Required previous education / school leaving certificate: Certificate of Secondary Education or better General Certificate of Secondary Education

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Technical handicraft lessons, Computer science, Physics

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Ability to work under pressure, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Body control, Craft skills, Technical understanding, Drawing skills, Math understanding, Text comprehension, Linguistic comprehension, Health, Free of dizziness

Interests: Different joining techniques for metal and (dis-)assembly and working with metal parts (e.g. forming, cutting, welding) as well as working with NC tool machines (e.g. programming, setting up) and troubleshooting and correction of defects on systems / system parts. Control technology and checking of electro-technical components.

Trends:

Virtual Reality (VR) plays an increasing role in learning how to control new machine elements as part of training applications. Thereby the real machine control is coupled with virtual machine models or VR is used as part of e-learning programs.

Augmented Reality (AR) technology is increasingly being used when changing over machines in series production and when a virtual commissioning of systems takes place. VR technology supports machine operators in feeling heat, cold, vibrations and surface textures, for example.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, the construction mechanic will have to deal more with new technologies that will change his field of work due to the increasing digitisation. These include: 3D printing (e.g. manufacturing components), monitoring apps for production processes (e.g. in networked production facilities), augmented reality operations (e.g. maintenance with the help of data glasses/tablets), Cobots (e.g. collaboration when welding), industrial robots (e.g. setting up robots, checking failures), embedded systems (e.g. checking embedded systems in CNC-machines), real-time systems, sensors (e.g. checking sensors), machine data acquisition (e.g. for CNC-machines), PLC (e.g. setting up flame cutting systems), wearable technology (e.g. monitoring CNC-machines with data glasses), networked production systems (e.g. handling digital production systems).

Further training opportunities/courses: 1. In the field of metalworking, steel/metal construction, sheet metal working/processing. 2. In the field of welding technology, 3. In the field of CNC-technology, 4. Further training to become an industrial foreman specialized in metal, 5. Further training to become a technician with specification metal construction technology, 6. Degree in mechanical engineering/construction technology

Alternative professions: Metal worker for construction technology or commercial vehicle construction, container/apparatus manufacturer, plant mechanic

Training abroad: Partly in Finland, Ireland, Italy, Malta, Austria, Poland, Spain and additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/kurzbeschreibung&dkz=29049&such=Konstruktionsmechaniker%2Fin>

<https://web.arbeitsagentur.de/berufetv/suche/film:filmId=3usiUMmUEaJeUnzGVmRts1>

<https://planet-beruf.de/schuelerinnen/berufe-finden/a-z/ausbildungsberufe-k/konstruktionsmechaniker-in>

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/konstruktionsmechaniker.html>

<https://www.me-vermitteln.de/konstruktionsmechaniker-in>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/1214

https://www.youtube.com/results?search_query=Konstruktionsmeachinker

Production mechanic

Short job description: Production mechanics manufacture industrial series products such as machines, motor vehicles and household appliances on the basis of technical drawings or assembly plans by assembling individual parts and assemblies, e.g. by screwing, gluing, soldering and assemble them. And they lay and connect electrical cables and carry out quality controls. Furthermore they take on maintenance and repair work.

Typical industries and operational areas: Production mechanics mainly work in the metal and electrical industry and here in particular in series production. They work in production and assembly halls, but also in storage rooms.

Type of training: Production mechanic is a recognized training profession that is assigned to the Chamber of Commerce and Industry. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/training: 3 years (in Germany)

Required previous education / school leaving certificate: General Certificate of Secondary Education

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technical handicraft lessons, Physics

Required social competencies in order to practice the profession: Care, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Math understanding, Dexterity, Health, Free of dizziness

Interests: Assembly of plant elements and components, maintenance of machines /tools/ production plants/ manufacturing systems, applying measuring methods, reading and interpreting digital/ analogue data for process optimisation, functional testing and adjustment of products.

Trends:

Increasing work with so-called Cobots (special robots), which work hand in hand with people and, thanks to built-in sensors, switch off at the slightest touch in order to avert danger from the people they work with. They are increasingly being used to support the work that is problematic for people, such as ergonomically difficult, monotonous, difficult, dangerous or dirty tasks. Support for the skilled workers in finer assembly and quality assurance work.

The operation and programming of machine tools and production machines are becoming more complex. Virtual Reality (VR) enables specialists to learn how to control new machine elements, for example, without losing material or wearing out tools. The real machine control is coupled with virtual machine models for the learning process.

Augmented reality technologies and language assistants in the field of maintenance and repair make work easier, especially for drive and control systems in automobile, aircraft and ship construction or plant and mechanical engineering. Tablets, Smartphones and data glasses are used here to make virtual information such as repair instructions, setting values, etc. visible to the specialist. Or language assistants who answer complex questions directly in the work process are used.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, production mechanics will have to deal more with new technologies that will change their field of work due to the increasing digitisation. These include: 3D printing (e.g. manufacturing components), monitoring apps for production processes (e.g. monitoring networked production facilities), augmented reality operations (e.g. maintenance by using data glasses/tablets), real-time data systems (e.g. optimising production facilities in real time based on machine data), embedded systems (e.g. checking embedded systems in CNC machines), machine data acquisition, setting up industrial robots for assembly, sensors (e.g. checking sensors), predictive maintenance (e.g. ongoing evaluation of machine/system data to minimize failures), PLC (e.g. Setting up and programming automatic production systems), wearable technology (e.g. monitoring CNC-machines with data glasses), networked production systems (e.g. handling digital production systems).

Further training opportunities/courses: 1. In the field of production/manufacturing technology, mechanical engineering/plant construction, CNC technology, welding/joining/separating technology. 2. On the use of Cobots, 3. On the use of augmented reality technologies, 4. Further training to become an industrial foreman specialized in metal, 5. Further training to become a technician specialized in machine technology / production technology, 6. Degree in mechanical engineering/production technology

Alternative professions: Mechatronic engineer, precision mechanic, specialist in metal technology specialized on assembly technology, industrial mechanic, stamping and forming mechanic

Training abroad: Partly in Finland, Ireland, Italy, Malta, Austria, Poland, Spain and additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/kurzbeschreibung&dkz=2488&such=Fertigungsmechaniker%2Fin>

<https://web.arbeitsagentur.de/berufetv/suche/film;filmId=5mmrGd21QZnM9nNAnEd6Mh>

<https://planet-beruf.de/schuelerinnen/berufe-finden/a-z/ausbildungsberufe-f/fertigungsmechaniker-in>

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/fertigungsmechaniker.html>

<https://www.me-vermitteln.de/fertigungsmechaniker-in>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/nh454578

https://www.youtube.com/results?search_query=fertigungsmechaniker

Cutting machine operator

Short job description: Cutting machine operators produce precise components, primarily made of metal. For that they use cutting production processes such as milling, turning, drilling and grinding and work with CNC-controlled machine tools and production systems. They set up the machines, modify programs and then monitor the machining process. In addition, they check workpieces for accuracy and fix machine faults. They also carry out machine inspections and maintain them.

Typical industries and operational areas: Cutting machine operators mainly work in mechanical engineering / tool making companies and in companies that specialized on metalworking and cutting technology. In addition, they are employed in vehicle construction, two-wheeler construction, aircraft construction and work in companies that produce electric motors / generators and transformers. They mainly work in machine halls.

Type of training: Cutting machine operator is a recognized apprenticeship that is assigned to the Chamber of Industry and Commerce. However, the profession is also trained in craft. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/training: 3,5 years (in Germany)

Required previous education / school leaving certificate: General Certificate of Secondary Education

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Craft lessons, Computer science, Physics

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Ability to work under pressure, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Math understanding, Concentration, Dexterity, Linguistic comprehension, Health

Interests: Working with metal and with computer-controlled turning lathes and milling machines, operating computer-controlled machines, checking for dimensional accuracy and documentation of workpieces, analyzing production orders and evaluating the technical implementation of these

Trends:

Increasing work with so-called Cobots (special robots) that work hand in hand with people and, thanks to built-in sensors, switch off at the slightest touch in order to avert danger from the person they are working with. They are increasingly used to support work that is problematic for people, such as ergonomically difficult, monotonous, difficult, dangerous or dirty tasks. They can be used as an interface between skilled workers and their various tasks.

The operation and programming of machine tools and production machines are becoming more complex. Virtual Reality (VR) enables skilled workers, for example, to learn how to control new machine elements without losing material or tool wear. For that the real machine control is coupled with virtual machine models for the learning process.

Augmented -reality-technologies and voice assistants in the field of maintenance and repair contribute to making work easier, especially for drive and control systems in automobile, aircraft and shipbuilding industry or the plant / mechanical engineering. Tablets, Smartphones and data glasses are used here, which make virtual information such as repair instructions, setting values, etc. visible to the skilled workers. Or voice assistants who answer complex questions directly in the work process.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, the cutting machine operator will have to deal more with new technologies that will change his field of work due to the increasing digitisation. These include: 3-D laser scanning (e.g. control the measuring of workpieces automatically, process optimisation), actuators (e.g. manufacturing of intelligent tools), monitoring apps for production processes, augmented reality operations (e.g. maintenance using data glasses/tablets), real-time data systems (e.g. real-time optimisation of production facilities), industrial robots (e.g. use for cutting stone/wood/plastic/ aluminium and check their work for errors), sensors (e.g. check sensors of CNC-machines), PLC (e.g. set up and program machine tools), wearable technology (e.g. monitoring CNC-machines with data glasses), networked production systems (e.g. handling digital networked production systems).

Further training opportunities/courses: 1. In the field of cutting metal deformation, CAD technology, CNC technology, cutting metal technology. 2. In the field of production/manufacturing technology, 3. On the application of augmented reality technologies, 4. On the use of robots, 5. Further training as an industrial foreman specialized in metal, 5. Further training as a technician specialized in machine technology/ cutting technology

Alternative professions: Precision mechanic, tool mechanic, industrial mechanic, precision tool mechanic

Training abroad: Partly in Finland, Ireland, Italy, Malta, Austria, Poland, Spain and additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/kurzbeschreibung&dkz=29053&such=Zerspanungsmechaniker%2Fin>

<https://web.arbeitsagentur.de/berufetv/suche/film;filmId=-XkF4xQpExQNqKQLciAkt>

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/zerspanungsmechaniker.html>

<https://www.me-vermitteln.de/zerspanungsmechaniker-in>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/782319

https://www.youtube.com/results?search_query=zerspanungsmechaniker

Tool mechanic

Short job description: Tool mechanics manufacture pressure/injection moulds and stamping tools as well as assembly/welding/testing devices for the industrial series production and mechanical engineering. They also manufacture surgical and precision engineering instruments. They use CNC machine tools for the production, set them up and program them. They work on the basis of technical drawings and use drilling, turning, milling and grinding machines. In addition, they assemble individual parts into finished tools, test, maintain and repair them.

Typical industries and operational areas: Tool mechanics mainly work in the metal and plastics processing industry (in the series production). But also in companies that engineer tools or manufacture precision engineering or medical devices. They work primarily in workshops and production halls and, if necessary, on site at the customer's.

Type of training: Tool mechanic is a recognized apprenticeship that is assigned to the Chamber of Industry and Commerce. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/training: 3,5 years (in Germany)

Required previous education / school leaving certificate: General Certificate of Secondary Education

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Craft lessons, Computer science, Physics

Required social competencies in order to practice the profession: Care, Communication skills, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Power of observation, Math understanding, Text comprehension, Linguistic comprehension, Health

Interests: Accurate machining of components with hand tools, assembling individual parts/assemblies into tools, repairing tools, creating and programming machine programs and carrying out of error analyses, quality checks/analysis and documentation of these.

Trends:

3D printing will become increasingly important in the tool making field in the future, because smaller series in particular can be manufactured by using this technology. But the technology is also used in the manufacture of prototypes, spare and special parts as well as injection/die casting/ stamping/ bending tools.

Increasing work with so-called Cobots (special robots), which work hand in hand with people and, thanks to built-in sensors, switch off at the slightest touch in order to avert danger from the person they work with. They are increasingly being used to support work that is problematic for people, such as ergonomically difficult, monotonous, difficult, dangerous or dirty tasks. They can be used as an interface between skilled workers and their various tasks.

The operation and programming of machine tools and production machines are becoming more complex. Virtual Reality (VR) enables skilled workers, for example, to learn how to control new machine elements without losing material or tool wear. For that the real machine control is coupled with virtual machine models for the learning process.

Augmented-reality- technologies support the conversion of machines in series production and guide the skilled workers through the conversion process. They also contribute to faster utilization of systems by putting them into operation virtually. Augmented-reality-technologies and voice assistants are also used in the field of maintenance and repair and contribute to making work easier, especially for drive and control systems in the automobile, aircraft and shipbuilding industry or the plant / mechanical engineering. Tablets, Smartphones and data glasses are used here, which make virtual information such as repair instructions, setting values, etc., visible to the skilled workers. Or voice assistants who answer complex questions directly in the work process.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, tool mechanics will have to deal more with new technologies that will change their field of work due to the increasing digitisation. These include: 3D-printing (e.g. stamping/ bending/ high-performance tools in small series), 3D-laser scanning (e.g. in quality assurance), actuators (e.g. for the manufacture of intelligent tools), monitoring apps for production processes, augmented reality operations (e.g. maintenance with the help of data glasses/tablets), auto-ID (e.g. identification of components/ measuring points for machine monitoring), Cobots, industrial robots (e.g. setting up robots for deep hole drilling), sensors (e.g. checking sensors of CNC-machines), predictive maintenance (e.g. ongoing evaluation of machine/ system data to minimize failures), PLC (e.g. programmable logic controller when setting up machines), wearable technology (e.g. setting up and programming machine tools), networked production systems (e.g. handling digitally networked production systems), wearable technology (e.g. controlling CNC-machines with data glasses)

Further training opportunities/courses: 1. In the field of tool making, CNC-technology, metal cutting, welding and joining techniques. 2. On the use of Cobots and 3D-printers, 3. On the use of augmented reality technologies 4. Further training to become an industrial foreman specialized in metal, 5. Further training to become a technician in mechanical engineering / manufacturing engineering, 6. Degree in construction technique / production technology

Alternative professions: Precision mechanic, precision tool mechanic, surgical mechanic, industrial mechanic, cutting machine operator

Training abroad: Partly in Finland, Ireland, Italy, Malta, Austria, Poland, Spain and additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/suchergebnisse/kurzbeschreibung&dkz=29051&such=Werkzeugmechaniker>

<https://web.arbeitsagentur.de/berufetv/suche/film:filmId=6QCEzXB7aW56GdgS9jvH6Z>

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/werkzeugmechaniker.html>

<https://www.me-vermitteln.de/werkzeugmechaniker-in>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/585859

https://www.youtube.com/results?search_query=Werkzeugmechaniker

Mechatronics engineer

Short job description: Mechatronics engineers build and assemble mechatronic systems (e.g. robots for industry) and plants in from mechanical, electrical and electronic components and assemblies, which they also check. They put finished systems into operation, program them or install the required software. As a basis for it serve design drawings and circuit diagrams. They also repair mechatronic systems and plant or recondition them and give them over to customers.

Typical industries and operational areas: Mechatronics engineers work in mechanical/ plant engineering and automation technology companies. They can also be found in the field of vehicle, aircraft and spacecraft construction as well as medical technology. They work in production halls, workshops and on-site with customers when systems are to be installed, repaired or maintained there.

Type of training: Mechatronics engineer is a recognized apprenticeship that is assigned to the Chamber of Industry and Commerce. However, the profession is also trained in craft businesses. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/training: 3,5 years (in Germany)

Required previous education / school leaving certificate: General Certificate of Secondary Education up to university entrance qualification

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Craft lessons, Computer science, Physics

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Willingness to learn, Ability to work under pressure, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Organisational talent, Math understanding, Logical thinking, Dexterity, Retentivity, Text comprehension, Linguistic comprehension, Free of dizziness

Interests: They work (e.g. screwing, gluing, soldering, welding) with metals and on systems (e.g. repairs, replacement of spare parts), install drive systems, sensors, converters, program mechatronic systems and analyze and rectify errors on systems (e.g. mechanical, pneumatic, hydraulic and electrical or electronic components), carry out tests on mechatronic systems.

Trends:

Increasing work with so-called Cobots (special robots) that work hand in hand with people and, thanks to built-in sensors, switch off at the slightest touch in order to avert danger from the person they are working with. They are increasingly used to support work that is problematic for people, such as ergonomically difficult, monotonous, difficult, dangerous or dirty tasks. They can be used as an interface between skilled workers and they are able to carry out finer assembly work.

The operation and programming of machine tools and production machines are becoming more complex. Virtual Reality (VR) enables skilled workers, for example, to learn how to control new machine elements without losing material or tool wear. For that the real machine control is coupled with virtual machine models for the learning process. By using augmented-reality-technologies series production can be improved by guiding users step-by-step virtually through a machine changeover process. Furthermore, the technology ensures that the users can feel e.g. heat, cold, vibrations and surface textures better.

Augmented-reality-technologies and voice assistants in the field of maintenance and repair contribute to making work easier, especially for drive and control systems in the automobile, aircraft and shipbuilding industry or the plant / mechanical engineering. Tablets, Smartphones and data glasses are used here, which make virtual information such as repair instructions, setting values, etc., visible to the skilled workers. Or voice assistants who answer complex questions directly in the work process.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, mechatronics engineers will have to deal more with new technologies that will change their field of work due to the increasing digitisation. These include: 3D-printing (e.g. optimisation of additive manufacturing systems), actuators (e.g. installation in systems), monitoring apps for production processes, augmented reality operations (e.g. robot maintenance by using tablets), auto-ID (e.g. identification of components/ measuring points when monitoring machines), embedded systems (e.g. verification of embedded systems in plants/ machines), Cobots, real-time data systems (e.g. real-time optimisation of machines), repairing / optimising industrial robots, adapting IoT-platforms to production plants, machine-to-machine communication (e.g. definition of the automated exchange of information), machine data acquisition, sensors (e.g. sensor installation and replacement), predictive maintenance (e.g. ongoing evaluation of machine/ system data to minimize failures), PLC (e.g. creation of regulation/ control programs), wearable technology (e.g. monitoring of robot systems with data glasses), networked production systems

Further training opportunities/courses: 1. In the field of mechatronics, robotics, PLC-technology, measurement/ control/ regulation technology. 2. On the use of Cobots, 3. On the use of augmented reality technologies, 4. Further training to become an industrial foreman in the specification mechatronics, 5. Further training to become a technician in machine technology, 6. Degree in mechanical engineering / mechatronic

Alternative professions: Industrial mechanic, electronics technician for industrial engineering / for automation technology / for devices and systems / for machine and drive technology

Training abroad: Partly in Finland, Ireland, Italy, Malta, Austria, Poland, Spain and additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/suchergebnisse/kurzbeschreibung&dkz=2868&such=Mechatroniker%2Fin>

<https://web.arbeitsagentur.de/berufetv/suche/film;filmId=3wTVNSjpWMujsUKvJqHx07>

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/mechatroniker.html>

<https://www.me-vermitteln.de/mechatroniker-in>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/868686

https://www.youtube.com/results?search_query=Mechatroniker

Machine and system operator – metal and plastics technology

Short job description: Machine/ system operators with a focus on metal/ plastics technology work with machines and systems with which components/ assemblies or products made of metal or plastic are manufactured. You compile the order-related materials, set up the production machines (e.g. lathes/ drilling/ saws/ grinding/ forming machines), equip them with materials and put them into operation. In addition, they maintain the machines. They also assemble entire assemblies, control production processes and intervene when there are in deviations or malfunctions.

Typical industries and operational areas: Machine/ system operators with a focus on metal/ plastics technology work in the industry in companies that work on or process metal and plastic. These include companies that can be assigned to machine/ tool/ metal construction, metalworking and plastics processing. They work primarily in workshops/ production halls.

Type of training: Machine/ system operator with a focus on metal /plastics technology is a recognized apprenticeship that is assigned to the Chamber of Commerce and Industry. However, it is also trained in handicraft businesses. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/training: 2 years (in Germany)

Required previous education / school leaving certificate: Certificate of Secondary Education or General Certificate of Secondary Education

Required school subjects, in which subjects potential trainees should perform well:
Craft lessons, Technical handicraft lessons, Physics

Required social competencies in order to practice the profession: Care, Ability to make decisions, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Power of observation, Math understanding, Concentration, Capacity of reaction, Linguistic comprehension

Interests: Working, operating and monitoring various production machines such as injection molding machines, forming machines (from setting up to monitoring) by using monitors, applying different processes such as cutting, forming, connecting, working on automated production systems, identifying machine faults and eliminating them.

Trends:

In the future 3D-printing will gain in importance in additive manufacturing. It is to be expected that three-dimensional objects will be produced by using 3D-printing. In the future, the process will be increasingly used in the manufacture of prototypes, the manufacture of spare parts/ special parts and in series production of injection molding / die casting tools, punching /bending tools and tools for sheet metal forming.

Increasing work with so-called Cobots (special robots) that work hand in hand with people and, thanks to built-in sensors, switch off at the slightest touch in order to avert danger from the person they are working with. They are increasingly used to support work that is problematic for people, such as ergonomically difficult, monotonous, difficult, dangerous or dirty tasks. They can be used as an interface between skilled workers and can carry out fine assembly work.

The operation and programming of machine tools and production machines are becoming more complex. Virtual Reality (VR) enables skilled workers to learn how to control new machine elements, for example, without losing material or wearing out tools. For that the real machine control is coupled with virtual machine models for the learning process. By using augmented-reality-technologies, users can be guided virtually step by step through a machine set-up process and systems can be put into operation virtually. Furthermore, this technology ensures that its users can e.g. feel heat, cold, vibrations and surface textures better.

Digitisation issues (e.g. specifications on different technologies, know-how):

Machine/ system operators with a focus on metal/ plastics technology will have to deal more with new technologies that will change their field of work due to increasing digitisation. These include: 3D-printing (e.g. in the manufacture of special components by building up material powders in layers), installing and replacing actuators, augmented reality operations (e.g. maintenance with the help of data glasses/tablets), auto-ID (e.g. identification of components/ measuring points for machine monitoring), monitoring apps for production processes, Cobots for assembly work, real-time data systems (e.g. optimisation of production facilities in real time), machine data acquisition from CNC-machines, sensors (e.g. checking sensors from CNC-machines), PLC (e.g. setting up and programming automatic production systems), wearable technology (e.g. monitoring of CNC-machines with data glasses), networked production systems (e.g. handling digital production systems).

Further training opportunities/courses: 1. In the field of machine/ system operation, metal/plastics processing, manufacturing/ production technology, 2. On the use of 3D-printing in robot technology, 3. On the use of augmented-reality-technologies, 4. Further training to become an industrial foreman in the specification metal, 5. Further training to become a technician in plastics technology 6. Degree in production engineering

Alternative professions: Machine/ system operator with other specializations such as food/ textile technology, textile finishing, paper processing, precision mechanics, production mechanics, industrial mechanics, specialists in metal technology (all disciplines), tool mechanics, cutting machine operators, process mechanics (all disciplines)

Training abroad: Additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/suchergebnisse/kurzbeschreibung&dkz=132653&such=Maschinen-+und+Anlagenf%C3%BChrer%2Fin>

<https://web.arbeitsagentur.de/berufetv/filme-a-z/M/film;filmId=BQMxs94SkPhqRachrvnN8c>

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/maschinen-und-anlagenfuehrer.html>

<https://www.me-vermitteln.de/maschinen-und-anlagenfuehrer-in>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/87iz96t0

https://www.youtube.com/results?search_query=maschinen+und+anlagenf%C3%BChrer

Specialist for metal technology – construction technique

Short job description: Specialists for metal technology specializing in construction technology manufacture customized constructions from sheet metal, profiles and pipes. They use technical documents to plan their work steps, determine the manufacturing process and the necessary tools and machines. They manufacture individual parts by forming and cutting, treating them with surface protection, for example, and planning the overall assembly of the metal constructions. They assemble the constructions on site based on plans and test specifications and carry out quality checks, e.g. of welded joints. Furthermore machine maintenance is part of their job.

Typical industries and operational areas: Specialists in metal technology specializing in construction technology work in industrial and craft companies whose focus is on metal, machine or vehicle construction. They are also active in the construction industry (e.g. building construction, concrete and reinforced concrete construction). They work in production halls, but also on site at customers and outdoors.

Type of training: Specialists in metal technology specializing in construction technology is a recognized apprenticeship that is assigned to the Chamber of Commerce and Industry. However, it is also trained in handicraft businesses. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/training: 2 years (in Germany)

Required previous education / school leaving certificate: Certificate of Secondary Education

Required school subjects, in which subjects potential trainees should perform well:

Mathematics, Technology, Craft lessons, Physics

Required social competencies in order to practice the profession: Care, Ability to work under pressure, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Math understanding, Concentration, Linguistic comprehension, Health, Free of dizziness

Interests: Processing sheet metal by hand (e.g. forming, cutting) and assembling components (e.g. joining, aligning), work according to technical specifications

Trends:

Increasing work with so-called Cobots (special robots) that work hand in hand with people and, thanks to built-in sensors, switch off at the slightest touch in order to avert danger from the person they are working with. They are increasingly used to support work that is problematic for people, such as ergonomically difficult, monotonous, difficult, dangerous or dirty tasks. They can be used as an interface between skilled workers and their various tasks.

The operation and programming of machine tools and production machines are becoming more complex. Virtual Reality (VR) enables skilled workers, for example, to learn how to control new machine elements without losing material or tool wear. For that the real machine control is coupled with virtual machine models for the learning process or learned through e-learning programs with VR.

By using augmented-reality-technologies, users can be guided virtually step by step through a machine set-up process in series production and can optimize them and put into operation virtually. Furthermore, this technology ensures that its users can e.g. feel heat, cold, vibrations and surface textures better.

Digitisation issues (e.g. specifications on different technologies, know-how):

Specialists in metal technology specialising in construction technology will have to deal more with new technologies that will change their field of work due to increasing digitisation. These include: 3D-printing (e.g. manufacturing components by using material powders), monitoring apps for production processes and ensuring the operation of production facilities, augmented reality operations (e.g. maintenance by using data glasses/ tablets), use of Cobots for welding work, machine data acquisition for CNC-machines, wearable technology (e.g. monitoring of CNC- machines with data glasses)

Further training opportunities/courses: 1. In the field of metalworking, construction, production/ manufacturing technology, welding/ joining/cutting techniques, 2. On the use of Cobots, 3. Supplementary training as a plant mechanic or construction mechanic, 4. Further training to become an industrial foreman in the specification metal, 5. Further training to become a technician in mechanical engineering or construction design, 6. Degree in construction design

Alternative professions: Metal worker specialising in construction technology, construction mechanic, plant mechanic, machine and system operator specialising in metal/ plastics technology, specialist for metal technology (Specialization: assembly technology or forming)

Training abroad: Partly in Finland, Ireland, Italy, Malta, Austria, Poland, Spain and additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/suchergebnisse/kurzbeschreibung&dkz=122290&such=Fachkraft+Metalltechnik>

https://web.arbeitsagentur.de/berufetv/suche/film;filmId=DY4c_PG376EKwFZoCRuN-F

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/fachkraft-metalltechnik.html>

<https://www.me-vermitteln.de/fachkraft-fuer-metalltechnik#uebersicht>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/kon33445

https://www.youtube.com/results?search_query=fachkraft+metalltechnik+konstruktionstechnik+

Electric system mechanic

Short job description: Electrical system mechanics install and assemble, among other things, generators and transformers, lightning rods and overhead lines for trains and overhead lines. They are responsible for the installation of control/ regulation technical, reporting/ safety/ lighting technical systems. They are responsible for the whole order processing. In addition, they manufacture mechanical and electrical components for their assembly work and check system parts and carry out maintenance/ repair work on systems.

Typical industries and operational areas: Electric system mechanics work mainly in energy supply companies and companies for electrical installations. They are also employed by companies that manufacture electrical equipment and components, and by manufacturers of process control equipment. They are working on assembly sites, but also in workshops and on-site at customers. They work at great heights, outdoors and often in shift works (on-call duty).

Type of training: Electric system mechanic is a recognized apprenticeship that is assigned to the Chamber of Industry and Commerce. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/training: 3 years (in Germany)

Required previous education / school leaving certificate: General Certificate of Secondary Education

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Technical handicraft lessons, Physics

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Ability to work under pressure, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Drawing skills, Organisational talent, Math understanding, Logical thinking, Dexterity, Retentivity, Text comprehension, Linguistic comprehension, Health, Free of dizziness

Interests: Working with cables and lines as well as building control cabinets and electrical assemblies, processing metal/ plastic sheets in the manufacture of mechanical parts, fault diagnosis/ analysis on systems.

Trends:

Augmented-reality-technologies and language assistants in the field of maintenance and repair make work easier, especially for drive and control systems in automobile, aircraft and ship construction or plant and mechanical engineering. Tablets, Smartphones and data glasses are used here, which make virtual information such as repair instructions, setting values, etc. visible to the skilled workers. Or language assistants that answer to complex questions directly in the work process.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, the electric system mechanics will have to deal more with new technologies that will change his field of work due to the increasing digitisation. These include: 3D-printing (e.g. production of individual parts), actuators (e.g. for control and diagnostic functions), augmented reality operations (e.g. assembly and maintenance by using virtual information), Cobots during assembly, connected buildings (e.g. installation of building automation systems) , real-time data systems for the maintenance of e.g. systems, microelectronics, photonics, predictive maintenance (e.g. ongoing evaluation of machine/ system data to minimize failures), sensors, service portals/ apps (e.g. for technical documentation), PLC (e.g. for automatic systems), use of language assistants for error diagnostics, wearable technology (e.g. maintenance/ repair work with the support of data glasses)

Further training opportunities/courses: 1. In the field of electrical engineering, measurement/ control/ regulation technology, standards, testing and safety regulations, 2. In the field of information/ communication technology, 3. For the use of augmented-reality-technologies, 4. Further training as an industrial foreman specialized on electrical engineering, 5. Further training as a technician for electrical engineering, 6. Degree in electrical engineering/ energy technology

Alternative professions: Electronics technician for industrial engineering, for machine/ drive technology, for energy /building technology, for building/ infrastructure systems

Training abroad: Partly in Finland, Ireland, Italy, Malta, Austria, Poland, Spain and additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/suchergebnisse/kurzbeschreibung&dkz=2774&such=Elektroanlagenmonteur%2Fin>

<https://web.arbeitsagentur.de/berufetv/suche/film:filmId=9Z76FZfbz9NaPzXrPpWgCh>

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/elektroanlagenmonteur.html>

<https://www.me-vermitteln.de/elektroanlagenmonteur-in>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/3113101

https://www.youtube.com/results?search_query=elektroanlagenmonteur+

Electronics technician for industrial technology

Short job description: Electronics technicians for industrial technology install electrical components and plants in the field of energy supply, in industrial operating systems and in building system/ automation technology. They make changes and extensions to plants/ systems, install energy systems, set up machines and assemble switch components. They also program and test systems, monitor, maintain and repair systems/ plants and instruct users on how to operate the systems. They also plan system/ plant assemblies and control the work of other trades.

Typical industries and operational areas: Electronics technicians for industrial technology work in companies that carry out electrical installations or are responsible for the energy supply. They are also employed by manufacturers of process control equipment for the industry and by companies that work with manufacturing plants. They work in production halls and workshops as well as on construction sites outdoors.

Type of training: Electronics technician for industrial technology is a recognized apprenticeship that is assigned to the Chamber of Industry and Commerce. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/ training: 3,5 years (in Germany)

Required previous education / school leaving certificate: Good "General Certificate of Secondary Education"

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technical handicraft lessons, Computer science, Physics

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Willingness to learn, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Drawing skills, Organisational talent, Math understanding, Logical thinking, Dexterity, Retentivity, Text comprehension, Linguistic comprehension, Free of dizziness

Interests: Assembly of lighting systems and other electrical operating systems as well as construction of e.g. cases and switch components combinations for these, work with protective devices, claddings and insulations on industrial plants, evaluation of system/ plant/ diagnostic data and optimisation of work processes, testing of system functions and safety devices as well as recording of results.

Trends:

In the future, 3D-printing will be used even more in electronics, e.g. to print two-dimensional, curved surfaces with electronic components. Entire components with integrated circuits, diodes, etc., as well as entire electric motors are expected to be produced by using 3D-printing.

By using smart grids (intelligent networks), entire electricity networks (the generation and consumption) will be digitally controlled in the future. Furthermore the smart meters will replace analogue electricity meters and establish an Internet connection with the network operators. They ensure the knowledge of the degree of the load factor of networks and store data and regulate the commissioning of networked electronic devices based on electricity tariffs.

The expansion of renewable energies should be accelerated by using artificial intelligence (AI) and the energy transition should be promoted. With the help of artificial intelligence, weather data in the field of renewable energies can be analyzed more effectively and more concrete forecasts can be made for network utilization. However, artificial intelligence is also used in predictive maintenance, the optimisation of energy systems and the detection of, for example, attacks on power plants and energy systems/ networks via the Internet.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, the electronics technician for industrial technology will have to deal more with new technologies that will change his field of work due to the increasing digitisation. These include: 3D-printing of electronic components, 3D-laser scanning (e.g. measurement of industrial operating systems), 3D-simulation of computer-controlled systems (e.g. test runs), 5G-technology (e.g. digital networking of automated systems by using 5G-technology), actuators for control/ Installing safety/ diagnostic functions, monitoring apps for production processes, augmented-reality-operations (e.g. carrying out the maintenance of machines and test equipment by using virtually shown information), Cobots (e.g. installing system software for Cobots), connected buildings (e.g. networking of house/ communication technology), real-time data systems (e.g. predictive maintenance of machine and process data in real time), embedded systems (e.g. installing system software for automation systems), industrial robots (e.g. installing system software for industrial robots), IoT platforms (e.g. networking automated systems with IoT platforms) , machine-to-machine communication (e.g. definition of interfaces of digitally networked operating systems), machine data acquisition - MDA (e.g. installing systems for monitoring operating data), microelectronics, photonics, predictive maintenance (e.g. minimising unplanned repairs/ failures through ongoing data evaluation), sensors (e.g. sensors in control systems), service portals/ -Apps (e.g. with regard to customer contacts), smart grid, smart metering, programmable logic controller – PLC (e.g. installation of regulation and control programs for automation systems), installing networked production systems, construction of virtual power plants, wearable technology (e.g. use of data glasses for maintenance and repair).

Further training opportunities/courses: 1. In the field of electronics, measurement / control / regulation technology, standards, maintenance, repair, 2. On the use of 3D-printing, 3. On the use of artificial intelligence technologies, 4. Further training to become an industrial foreman in the specification electrical engineering, 5. Further training to become a technician in electrical engineering, 6. Degree in electrical engineering / mechatronics

Alternative professions: Electronics technician for automation technology, for machine /drive technology, for energy/ building technology, for building/ infrastructure systems, electric system mechanic, mechatronics engineer

Training abroad: Partly in Finland, Ireland, Italy, Malta, Austria, Poland, Spain and additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/suchergebnisse/kurzbeschreibung&dkz=15623&such=Elektroniker%2Fin+-+Betriebstechnik>

https://web.arbeitsagentur.de/berufetv/suche/film:filmId=7tqGtruzCaeA8_WBKDxk4z

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/elektroniker-fuer-betriebstechnik.html>

<https://www.me-vermitteln.de/elektroniker-in-betriebstechnik>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/544554

https://www.youtube.com/results?search_query=elektroniker+f%C3%BCr+betriebstechnik

Electronics technician for automation technology

Short job description: Electronics technicians for automation technology work on and with automated systems and build complex automation facilities. They analyse them and make changes or extensions. They install electrical, pneumatic and hydraulic drive systems and supply them with control and regulation components. They assemble and adjust sensors, bus and operating systems as well as networks and program them. They also carry out test runs and instruct customers on the systems and monitor, maintain and repair corresponding systems.

Typical industries and operational areas: Electronics technicians for automation technology work in companies that manufacture process control equipment, use automation solutions or work in the field of electrical installation. They are also employed in machine and tool construction and in automation technology, as well as in technical building equipment and other building installations. They work in workshops/ plants, test laboratories and offices as well as outdoors and at great heights.

Type of training: Electronics technician for automation technology is a recognized apprenticeship that is assigned to the Chamber of Industry and Commerce. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/training: 3,5 years (in Germany)

Required previous education / school leaving certificate: (Good) General certificate of Secondary Education up to university entrance qualification

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technical handicraft lessons, Computer science, Physics

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Customer orientation, Willingness to learn, Ability to work under pressure, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Organisational talent, Math understanding, Logical thinking, Dexterity, Retentivity, Text comprehension, Linguistic comprehension, Free of dizziness

Interests: Assembly and control of technical building systems, sensors and actuators as well as signal/ data transmission systems, fault finding and clearance in automation systems as well as analyzing diagnostic data or process data. In addition, the documentation of fault causes and of bad quality.

Trends:

In the future, 3D-printing will be used even more in electronics, e.g. to print two-dimensional, curved surfaces with electronic components. In the future, entire components with integrated circuits, diodes, etc., as well as entire electric motors will be manufactured by using 3D-printing.

Increasing work with so-called Cobots (special robots), which work hand in hand with people and, thanks to built-in sensors, switch off at the slightest touch in order to avert danger from the people they work with. They are increasingly being used to support work that is problematic for people, such as ergonomically difficult, monotonous, difficult, dangerous or dirty tasks. They can pass on components to the specialists who carry out finer assembly work.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, electronics technicians for automation technology will have to deal with new technologies that will change their field of work due to increasing digitisation. These include: 3D-printing of electronic components, 3D-laser scanning (e.g. measurement of automated manufacturing facilities), 3D-simulation of computer-controlled systems (e.g. virtual test runs), 5G-technology (e.g. digital networking of automated systems by using 5G-technology), installation of actuators for control/ safety/ diagnostic functions, augmented-reality-operations (e.g. the assembly of automated systems by using tablets and data glasses), Cobots, connected buildings (e.g. Installation of building automation systems), connected living (e.g. networking of home devices), real-time data systems (e.g. predictive maintenance of machine and process data of automation systems in real time), embedded systems (e.g. installing system software for automation systems), industrial robots (e.g. installing system software for industrial robots), IoT-platforms (e.g. networking of automated systems with IoT-platforms), machine-to-machine communication (e.g. definition of interfaces of digitally networked operating systems), machine data acquisition - MDA (e.g. systems for installation of systems for monitoring operating data), microelectronics, photonics, predictive maintenance (e.g. minimizing of unplanned repairs/ failures through ongoing data evaluation in automation systems), sensors (e.g. sensors as signal transmitters in automation systems), service portals/ apps (e.g. with regard to customer contacts), programmable logic controller - PLC (e.g. installation of regulation and control programs for automation systems), installing networked production systems, wearable technology (e.g. use of data glasses for maintenance and repair).

Further training opportunities/courses: 1. In the field of electronics, measurement / control / regulation technology, automation/ communication technology, maintenance, repair, 2. On the use of 3D-printing, 3. On the use of Cobots, 4. Further training to become an industrial foreman in the specification electrical engineering, 5. Further training to become a technician in electrical engineering, 6. Degree in automation technology/ robotics/ autonomous systems

Alternative professions: Electronics technician for industrial engineering, for machine /drive technology, for devices and systems, for information and system technology, electric system mechanic, mechatronics engineer, industrial technologist

Training abroad: Partly in Finland, Ireland, Italy, Malta, Austria, Poland, Spain and additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/suchergebnisse/kurzbeschreibung&dkz=15630&such=Elektroniker%2Fin+-+Automatisierungstechnik>

https://web.arbeitsagentur.de/berufetv/suche/film:filmId=4GrBDMjGrV4V-UXRn_zvkk

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/elektroniker-fuer-automatisierungstechnik.html>

<https://www.me-vermitteln.de/elektroniker-in-automatisierungstechnik>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/655665

https://www.youtube.com/results?search_query=elektroniker+f%C3%BCr+automatisierungstechnik

Electronics technician for devices and systems

Short job description: Electronics technicians for devices and systems manufacture electrical devices and systems for different purposes and build printed circuit boards, assemble components/ assemblies, install programs/ operating systems, carry out system tests and create system documentation/ manufacturing documents. They work closely with technicians and engineers. They are also active in production planning, testing and quality assurance and the maintenance and repair of devices and systems. They work in customer service and carry out repairs on devices and advise customers on device handling.

Typical industries and operational areas: Electronics technicians for devices and systems work in mechanical and plant engineering companies and they are also employed in companies that deal with vehicle electronics or measurement and control technology. In addition, they are employed in companies that manufacture electronic systems, devices and components. They work in workshops and test laboratories and on-site with customers.

Type of training: Electronics technician for devices and systems is a recognized apprenticeship that is assigned to the Chamber of Industry and Commerce. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/training: 3,5 years (in Germany)

Required previous education / school leaving certificate: (Good) General certificate of Secondary Education up to university entrance qualification

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technical handicraft lessons, Computer science, Physics

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Willingness to learn, Communication skills, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Drawing skills, Organisational talent, Math understanding, Logical thinking, Dexterity, Retentivity, Text comprehension, Linguistic comprehension

Interests: Assembly of hardware components during the commissioning of devices and systems, installation of components in cases, production of printed circuit boards and the analysis of production/ testing processes as well as causes of faults and fault clearance in devices and systems. In addition, testing, monitoring and repair of production/ testing equipment and documentation of results. Furthermore, working with technical transmission systems.

Trends:

In the future, 3D-printing will be used even more in electronics, e.g. to print two-dimensional, curved surfaces with electronic components. In the future, entire components with integrated circuits, diodes, etc., as well as entire electric motors will be manufactured by using 3D-printing.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, electronics technicians for devices and systems will have to deal with new technologies that will change their field of work due to increasing digitisation. These include: 3D printing of electronic components, installing actuators for control/ safety/ diagnostic functions, monitoring apps for production processes, augmented-reality-operations (e.g. maintenance of machines and assembly of components by using virtually displayed information), Cobots (e.g. development of control software for Cobots), real-time data systems (e.g. predictive maintenance of machine and process data in real time), embedded systems (e.g. installing system software for medical technology and vehicle electronics), industrial robots (e.g. hardware and software development), IoT-platforms (e.g. networking of IoT-platforms), machines-to-machine communication (e.g. definition of interfaces of digitally networked systems), machine data acquisition - MDA (e.g. optimisation of e.g. production systems by using evaluated process data), microelectronics, photonics, predictive maintenance (e.g. minimization of repairs/failures on energy systems through ongoing data evaluation), sensors (e.g. Sensors in control systems), service portals/ apps (e.g. with regard to customer contacts), smart grid, smart metering, programmable logic controller - PLC (e.g. development of control systems and programs), networked production systems, wearable technology (e.g. use of data glasses for maintenance and repair)

Further training opportunities/courses: 1. In the field of electronics, measurement / control / regulation technology, microtechnology, maintenance, repair, 2. On the use of 3D-printing, 3. Further training to become an industrial foreman in the specification electrical engineering, 4. Further training to become a technician in electrical engineering, 6. Degree in electrical engineering/ information and communication technology

Alternative professions: Electronics technician for information and systems technology, aircraft electronics technician, information and telecommunications systems electronics technician

Training abroad: Partly in Finland, Ireland, Italy, Malta, Austria, Poland, Spain and additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/suchergebnisse/kurzbeschreibung&dkz=15632&such=Elektroniker%2Fin>

<https://web.arbeitsagentur.de/berufetv/suche/film;filmId=BGxEY- T1hK-1-TWBbCFfr>

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/elektroniker-fuer-geraete-und-systeme.html>

<https://www.me-vermitteln.de/elektroniker-in-geraete-und-systeme>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/753159

https://www.youtube.com/results?search_query=elektroniker+f%C3%BCr+ger%C3%A4te+und+systeme

Electronics technician for information and systems technology

Short job description: Electronics technicians for information and systems technology are involved in the development of information/ communication systems, automation systems, signaling/ security systems and control elements and also carry out their installation. They assemble electrical and hardware components and install information technology devices and work on software solutions, they program, make system configurations, create interfaces and carry out system tests. They provide support for system problems and fix them.

Typical industries and operational areas: Electronics technicians for information and systems technology work in companies that are specialized in information and telecommunications technology and automation technology, as well as in companies that manufacture electrical systems/ components and service companies in the field of software development and information technology. They are also working where information technology systems are used. They work in production halls and workshops as well as in offices and on site with customers.

Type of training: Electronics technician for information and systems technology is a recognized apprenticeship that is assigned to the Chamber of Industry and Commerce. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/training: 3,5 years (in Germany)

Required previous education / school leaving certificate: (Good) General certificate of Secondary Education up to university entrance qualification

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technical handicraft lessons, Computer science, Physics, English

Required social competencies in order to practice the profession: Care, Flexibility, Willingness to learn, Creativity, Patience, Independent working, Motivation, Power of endurance

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Organisational talent, Math understanding, Logical thinking, Dexterity, Retentivity, Text comprehension, Linguistic comprehension

Interests: Working with hardware and software components and assembly of hardware components and electrical components, sensors, devices. Development of hardware and software solutions, implementation of analyses and software tests as well as documentation of test data. Furthermore use of measurement methods, e.g. to check the utilization and performance of systems.

Trends:

Increasingly networked systems in offices should contribute to climate protection and cost savings. In so-called Smart Offices, lighting and heating are networked and controlled via the Internet. Both regulate themselves according to the outside conditions (e.g. blinds, heating). In addition, building defects are identified and corrected at an early stage by using predictive maintenance. The programmed systems behind the technology open up a future field of employment.

And Smart and Connected Living is also based on the same principle and will gain in importance in the future. The networking of home devices such as TVs, refrigerators, stoves, washing machine, lamps, etc. and their remote control via Smartphones or tablets will continue to increase. The same applies to the building technology (e.g. air conditioning, heating) and security systems, which can be remotely controlled or report failures directly to the residents of the house. The customer-oriented development of such networked systems and their installation will promote the cooperation between electronics engineers and specialists from construction and supply engineering.

Furthermore, a progression of Industry 4.0 is to be expected in the industry. Work processes are becoming more and more networked and entire value chains are being digitised. In addition to machine communication, future work will be done on the development of cyber-physical systems (CPS) that range from the integration of process/ company control to failure analysis to the point of system maintenance. This is done by using embedded systems (microelectronic systems). Communication interfaces in the systems should help to network the different systems in the value chain.

But the general increase in networking through e.g. cloud computing or the Internet of Things, online trading, numerous apps and the use of mobile devices is also increasing. They hide security gaps that need to be prevented or closed through constant system adjustments. In the future, this will require even more IT-experts whose work focuses on IT-security.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, electronics technicians for information and systems technology will have to deal with new technologies that will change their field of work due to increasing digitisation. These include: 3D-printing of electronic components, 3D-laser scanning (e.g. measurement of industrial facilities), 3D-simulation of e.g. communication systems, 5G-technology (e.g. digital networking of information technology systems), actuators for control/ safety/ diagnostic functions, augmented-reality-operation (e.g. carrying out the maintenance of systems and plants by using virtually displayed information), connected buildings (e.g. equipping building automation with information technology systems), real-time data systems (e.g. predictive maintenance of machine and process data in real time), embedded systems (e.g. installing system software for communication/ security systems), development of control systems for driver assistance systems, machine-to-machine communication (e.g. definition of interfaces of digitally networked plants and systems), machine data acquisition - MDA (e.g. installing systems for monitoring production-related data), microelectronics, photonics, predictive maintenance (e.g. repair/ failure minimization through ongoing data evaluation), sensors (e.g. sensors for temperature measurement), service portals/ apps (e.g. providing customer support), networked production systems (e.g. installing components for automation systems and ensuring the operation), wearable technology (e.g. using data glasses for maintenance and repair)

Further training opportunities/courses: 1. In the field of electrical engineering, information/ communication technology, software development, IT-security, 2. For controlling home/ office devices via the Internet, 3. For the implementation of Industry 4.0, 4. Further training to become an industrial foreman in the specification electrical engineering, 5. Further training to become a technician in computer science, 6. Degree in electrical engineering/ information and communication technology

Alternative professions: Electronics technician for devices and systems, Electronics technician for automation technology, information and telecommunications systems electronics technician, mechatronics#

Training abroad: Partly in Finland, Ireland, Italy, Malta, Austria, Poland, Spain and additional qualification "European assistant"

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/suchergebnisse/kurzbeschreibung&dkz=122382&such=Elektroniker%2Fin>

<https://web.arbeitsagentur.de/berufetv/suche/film:filmId=-f2i6dBwHYv3hCukhnDKj>

<https://www.bmwi.de/Redaktion/DE/Artikel/Berufsbilder/systeminformatiker.html>

<https://www.me-vermitteln.de/elektroniker-in-informations-und-systemtechnik>

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/147852

https://www.youtube.com/results?search_query=elektroniker+f%C3%BCr+informations+und+systemtechnik

2. Selected core training professions from the craft vocational field

The professional profiles described below were identified by the project partner from Austria (see detailed table above) and described with a focus on the Austrian VET system. In relation to the craft vocational field, both professions from the field of construction and construction-related trades and other craft fields were identified that are affected by digitisation and may be known as training professions in other EU countries. With regard to the aspects of training duration, type of training and further training opportunities, the representations refer to Austria and may need to be adapted for other countries and their VET systems if necessary.

Painter and Coating Technician

Short job description: Painters and coating technicians protect and embellish plaster, stone, wood, concrete, metal and plastic surfaces with layers of primer, paint and varnish. (Standing on ladders or scaffolding) they paint apartments and offices as well as exterior façades of buildings, they also wallpaper and lay wall and ceiling coverings. They use sprayers and spatulas, paints and varnishes, chemical solvents and produce templates and designs on computers.

Typical industries and operational areas: Painters and coating technicians usually work in small and medium-sized commercial enterprises in workshops, on-site at customers' premises in indoor and outdoor spaces together with professional colleagues.

Type of training: Training in the apprenticeship occupation of painter and coating technician takes place in four different focal areas. Apprentices can specialise in decorative painting techniques, functional coatings, historical painting techniques and corrosion protection. 80% of the training takes place in the training company, 20% in the part-time VET school.

Duration of the apprenticeship/training: 3 years (in Austria)

Required previous education/ school-leaving qualification: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Craft lessons, Basic Digital Education, Physics, Chemistry, Art

Required social competencies in order to practice the profession: Care, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Sense of responsibility, Ability to work under pressure, Creativity, Kindness, Comprehension, Communication skills, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Body control, Craft skills, Technical understanding, Drawing skills, Power of observation, Math understanding, Concentration, Dexterity, Retentivity, Text comprehension, Health, Free of dizziness, Safety awareness, Free of dizziness

Interests: Processing surfaces with hand tools for protection or embellishment, colour design of rooms and façades, advising customers, interest in chemistry and physics in order to select suitable means for the particular purpose.

Trends:

Painters and coating technicians are increasingly using CAD drawings and graphics programs to create templates and present designs for interior design, façade design and interior painting in 3D to customers. Design elements such as lettering are drawn on a computer, printed on film and cut out with a plotter, then glued onto surfaces and painted or even wallpapered. Digital support saves painters and coating technicians from having to cut out templates or manually transfer templates to surfaces in order to paint lettering, for example. Especially in the field of redesign and renovation, the redesign of surfaces requires technical understanding. Special measuring devices are used, for example, to measure the air humidity and the room pressure. When redesigning façades, a photo can be taken with a tablet and the redesign can be simulated immediately using corresponding software. The immediate calculation of the material costs is also included in this process. The painting trade is increasingly using colour machines that can create individual colour shades for customers or scan and remix a colour shade. But in the future drones could also be used to inspect façades and paint hard-to-reach areas (without having to scaffold high structures). If nothing else, processes and procedures on construction sites are also becoming increasingly digitalised. The digital recording of working hours as well as automatic material calculation, ordering and cost calculations are leading to the increasing automation of organisational processes.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, painters and coating technicians will increasingly have to deal with new technologies that will change their field of work due to increasing digitalisation. These include: apps for planning and measuring, AutoCAD programs (e.g. for drawing rooms), graphics programs (for drawing templates, lettering), software programs for displaying rooms in 3D format, as well as for operating time recording and construction site organisation programs, devices for measuring air humidity and other parameters such as colour shades (require technical understanding), augmented reality visualisation (e.g. showing the customer the planned painting work on-site via an AR view using a tablet), colour readers (e.g. scanning existing wall colour and ordering the appropriate shade), drone technology (e.g. using a drone to check damage to façades), wearable technology (e.g. using data glasses to view installation plans via an AR view).

Further training opportunities/courses: There are CET opportunities in the following areas: restoration of old buildings and renovation of façades (including protection of historical buildings and monuments), new paints and varnishes, building ecology, building biology guidelines, sustainable materials, energy efficiency, environmental protection and health protection measures, quality assurance, customer service (especially for small and medium-sized enterprises), data security, data protection, privacy, process optimisation

Alternative professions: Lettering design and advertising technology, painting technology, paper-hanger and decorator, gold plating and decorating, stage designer, scene painter, conservator of monuments and building groups, retail trade (building materials advice or furnishing advice), restorer, stucco plasterer and drywaller

Training abroad: The association IFA (International Young Workers Exchange) organises abroad subject-related company placements for several weeks for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

Further information:

<https://www.bic.at/berufsinformation.php?brfid=292>

<https://www.bildungssystem.at/schule-oberstufe/berufsschule-und-lehre>

<https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20007850>

<https://ifa.or.at/auslandspraktika/#tab-id-2>

<https://blog.farbfox.de/digitalisierung-im-malerhandwerk-farbfox>

<https://www.brillux.de/unternehmen/blog/die-zukunft-der-branche-trendmap-2025/>

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/suchergebnisse/kurzbeschreibung/digitalisierung&dkz=15530&such=maler>

Baker

Short job description: Bakers produce different types of baked goods and bread according to a recipe. They also bake bread rolls and moulded pastries, viennoiseries, cakes, long-life baked goods such as rusks and biscuits. They select the recipes and various ingredients, weigh and measure them according to the recipes and make the doughs, which they then shape into the various baked goods by machine, but sometimes also by hand. The bakers supervise the fermentation process and the dough becoming soft and resting. They make coatings and fillings for the baked goods, bake the bread and pastries and glaze, fill and sugar the finished baked goods and viennoiseries. The finished products must be stored properly and the machines and equipment used must be carefully cleaned and maintained. In all their work, bakers pay close attention in order to ensure compliance with safety and hygiene regulations.

Typical industries and operational areas: Bakers work in artisanal businesses (bakeries) or large companies in the bread and baked goods industry. In smaller bakeries they also work in sales rooms and have direct contact with customers there.

Type of training: The training is in the apprenticeship occupation of baker and mainly takes place in the training company (80%). At the same time, the apprentices attend part-time VET school (20%). Here they are taught the theoretical background that bakers need to be successful in their profession.

Duration of the apprenticeship/training: 3 years (in Austria)

Required previous education/ school-leaving qualification: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Craft lessons, Biology, Physics, Chemistry, Nutrition

Required social competencies in order to practice the profession: Care, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Sense of order, Ability to work under pressure, Creativity, Kindness, Comprehension, Sense of order, Ability to make decisions, Communication skills, Independent working, Motivation, Power of endurance

Required skills in order to practice the profession: Handicraft, Eye-hand-coordination, Body control, Craft skills, Technical understanding, Power of observation, Math understanding, Concentration, Dexterity, Health, Safety awareness, Aesthetics, Hygiene awareness

Interests: Processing raw materials under strict hygiene guidelines, interest in food production, baked goods and designing new products

Trends:

In many bakeries or production halls, automatic kneading and mixing machines, recipe computers and fully electronic baking ovens are already in use. In larger companies, semi- and fully-automatic systems, so-called bread and roll lines, are used for the production of bread, rolls and pastries. These systems are digitally controlled and require bakers to have digital skills for the increasingly complex operation and monitoring of the machines and for troubleshooting.

The documentation and recording of processes is also becoming increasingly important in order to be able to carry out analyses of baking and business processes. The analysis of process steps for quality management and the calculation of costs have been underestimated by small craft enterprises so far. Here there is also a tendency to analyse these processes and document data for quality improvement. Through digital data capture, product returns, for instance, can be recorded automatically in the administrative area and costs can be documented more transparently.

Digitalisation issues (e.g. specification on different technologies, know-how):

In the future, bakers and baking technologists will increasingly have to deal with new technologies that will change their field of work due to increasing digitalisation. These include: work with databases, acquisition of specific software knowledge to operate machines such as recipe computers, kneading machines or automatic systems, software knowledge in the field of process analysis, inventory control, documentation and optimisation, warehouse management systems – WMS (e.g. using warehouse management software to monitor raw material and goods stocks).

Further training opportunities/courses: There are CET opportunities in the following areas: health sector (organic products, consideration of allergies, dietary food, etc.), new production and process technologies, food trends on the food market and in the food industry, commercial sector (business management, sales and marketing), master craftsperson school for bakers, industrial master college for organic and food technology, production management, business leadership, product development, quality assurance, customer service (especially for small and medium-sized enterprises), packaging technology, automation, intelligent logistics and storage systems

Alternative professions: Baking technology, pastry making, chocolatier, retail for food or delicacies, cook, food technician, food inspection body, gingerbread baker and chandler, confectionery maker, grain processing technician

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

Further information:

https://www.bic.at/berufsinformation.php?beruf=baeckerei_lehrberuf&brfid=165

<https://www.bildungssystem.at/schule-oberstufe/berufsschule-und-lehre>

<https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20007850>

<https://ifa.or.at/auslandspraktika/#tab-id-2>

<https://bis.ams.or.at/bis/LehrberufDetail.php?noteid=5706>

[https://www.ams-forschungsnetzwerk.at/downloadpub/AMS_info_522 - New Skills 53 - Honeder - Naturbackstube.pdf](https://www.ams-forschungsnetzwerk.at/downloadpub/AMS_info_522_-_New_Skills_53_-_Honedner_-_Naturbackstube.pdf)

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/suchergebnisse/kurzbeschreibung/digitalisierung&dkz=3626&such=b%C3%A4cker>

Installations and Building Technician (f/m/d)

Short job description: Installations and building technicians ensure that apartments, houses and also businesses are supplied with heat, water and air. They plan and install the corresponding ventilation, heating and water supply systems and ensure the discharge and disposal of waste gases and waste water. They install the necessary supply and discharge lines, install e.g. instantaneous gas-fired heaters, hot water tanks, gas cookers, heating and air conditioning systems, solar collectors and advise their customers on energy-saving techniques.

Typical industries and operational areas: Installations and building technicians are mainly employed in craft enterprises in the fields of heating, ventilation, gas and water installation, but also in companies in the fields of energy and water supply, building services and supply engineering as well as in companies in the building trade and construction industry. They work in a team with professional colleagues and have contact with private and corporate clients.

Type of training: The training is in the apprenticeship occupation of installations and building technician and mainly takes place in the training company (80%). At the same time, the apprentices attend part-time VET school (20%). Here they are taught the theoretical background that installations and building technicians need to be successful in their profession.

Duration of the apprenticeship/training: 3 or 4 years (Austria)

Required previous education/ school-leaving qualification: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Craft lessons, Technical handicraft lessons, Physics, National language

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Customer orientation, Sense of responsibility, Ability to work under pressure, Kindness, Communication skills, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Body control, Craft skills, Technical understanding, Drawing skills, Power of observation, Organisational talent, Math understanding, Logical thinking, Health, Free of dizziness, Security awareness

Interests: Interest in technology, working with heating, cooling and sanitary installations: planning and laying pipes for water supply and heating systems in buildings, installing boilers, radiators, heat pumps, energy recovery systems as well as air conditioning and ventilation systems in buildings, fitting sanitary installations such as bathtubs and shower trays, washbasins and sinks, toilet facilities and the associated fittings, calculating the power requirements of building and space heating systems, testing and adjusting the control and regulation system as well as the exhaust gas values of a heating system

Trends:

The activities of installations and building technicians are changing in several areas due to the ongoing digitalisation of tools and technologies: digital systems networked via the internet enable smart offices to switch on heating and lighting automatically. This works by means of sensors that measure incident sunlight and automatically lower the blinds if the sun is too strong. "Intelligent" electricity meters ("smart meters") compare the electricity tariffs that change depending on the time of day and can therefore contribute to more efficient control of energy in a building. Damage to the building's equipment that could lead to higher electricity consumption is detected and repaired at an early stage using the predictive maintenance technology.

Smart or connected living involves the networking of home appliances such as cookers, showers, refrigerators and thermostats, which respond via sensors and can be controlled via the internet using a Smartphone or tablet. The networking of security systems and water and moisture detectors is also gaining in importance in building technology, for example to report water damage directly to the owner of the house or apartment.

Augmented reality is also making it increasingly easy to carry out maintenance and repair work for heating and sanitary installations: with the help of mobile devices such as tablets, Smartphones and data glasses, virtual information is displayed in the field of vision of the installations and building technicians. In training and in working with customers, short explanatory videos (tutorials) available on the internet are helpful for guiding installation, maintenance and repair work.

Digitisation issues (e.g. specifications on different technologies, know-how):

Heating, cooling, sanitary and ventilation systems are increasingly being modernised by digital technologies. Installations and building technicians are therefore increasingly required to develop digital skills in order to be able to install, maintain and repair such digitalised systems, while also taking into account the individual needs of their customers. They work with the following digital tools here: 3D laser scanning (e.g. using 3D laser scans when planning refrigeration systems), actuators (e.g. installing actuators in control and regulation systems, for instance for burner control; replacing actuators), ambient assisted living – AAL (e.g. setting up options for automatic room temperature control), apps for planning and measurement (e.g. recording building dimensions precisely and processing them directly in the cloud), augmented reality operation (e.g. carrying out system maintenance with the aid of data glasses or tablets), connected buildings (e.g. integrating heating and air-conditioning systems into connected buildings), connected living (e.g. integrating air conditioning control systems into cloud-based building management services), real-time data systems (e.g. evaluating real-time data from heating systems to reduce energy consumption), embedded systems (e.g. implementing air conditioning monitoring systems with the help of embedded systems), sensor technology (e.g. installing sensors in air conditioning systems), wearable technology (e.g. repairing heating systems with the help of data glasses)

Further training opportunities/courses: Installations and building technicians have to keep up with the latest technological developments, continuously supplement and deepen their specialist knowledge, methodological competences and social skills. Further education institutions offer numerous courses for installations and building technology in most provinces (e.g. special welding courses, equipment courses). There are also further training courses on the topics of energy efficiency, building and energy, ecological/sustainable building and installation, building restoration. Opportunities for higher vocational qualifications are also offered by preparatory and add-on courses at colleges of higher vocational education (colleges of engineering – HTLs) as well as industrial master colleges for people in employment. Many companies also provide regular internal training for their employees on products, materials and processing methods, or offer manufacturing companies the opportunity to provide product training

Alternative professions: Reprocessing and recycling specialist – waste water (apprenticeship), refrigeration installations technology (apprenticeship), technical designer – installations and building technology (apprenticeship), technical designer – mechanical engineering/metal engineering/steel engineering (apprenticeship), metalworking (apprenticeship), metal technology (modular apprenticeship), tinsmith (apprenticeship)

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

Further information:

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https://www.berufslexikon.at/berufe/3425-InstallationstechnikerIn_und_GebaeudetechnikerIn-Hauptmodul_Gastechnik_und_Sanitaertechnik/

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<https://ifa.or.at/auslandspraktika/#tab-id-2>

Hairdresser

Short job description: Hairdressers (stylists) cut, groom and design people's hair and hairstyles and sometimes also groom beards. They make appointments with their customers, advise them on fashion trends, hairstyles that suit them and suitable hair and skin care products, and finally implement their requests. They work, for example, with combs, scissors, hair clippers, hair dryers, hair dye and hair care preparations and cosmetic products and work together with their colleagues.

Typical industries and operational areas: Hairdressers work in hairdressing salons, cosmetic institutes, beauty salons, retail and wholesale shops with hair care products, theatres and television companies, hotel and wellness businesses as well as hospitals and clinics.

Type of training: The training is in the apprenticeship occupation of hairdresser and mainly takes place in the training company (80%). At the same time, apprentices attend part-time VET school (20%). Here they are taught the theoretical background that they need to be successful in their profession.

Duration of the apprenticeship/training: 3 years (in Austria)

Required previous education/ school-leaving qualification: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Craft lessons, Chemistry, Art, National language

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Customer orientation, Willingness to learn, Ability to work under pressure, Creativity, Kindness, Willingness to contact, Empathy, Mastery, Communication skills, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Power of observation, Organisational talent, Math understanding, Concentration, Dexterity, Retentivity, Linguistic comprehension, , Health

Interests: Interest in fashion, hairstyles, styling and hair colours, working with scalp, hair, cosmetic and styling products (e.g. washing, applying), communicative and empathetic work and advice with/of customers and responding to individual customer wishes.

Trends:

For hairdressers, the digital communication channels that have emerged have changed the way they work with clients in particular: digital marketing enables them to acquire new customers via various social media channels. Social networks also offer innovative ways to connect with desired target groups online with live streams, videos and chat functions to increase awareness. Search engine optimized Websites, location-based advertising and blogs allow hairdressers to promote offers that are individually tailored to their clients as well as direct sales. Specific software is also used for cash register management and appointments are increasingly made and organized via online booking systems or social media channels such as Instagram or messenger services. Due to the considerable service orientation and the high importance of direct customer contact, many technologies and tools, such as presentations via mobile devices to illustrate hairstyles, have not yet found their way into the profession, whereas in vocational training, learning apps and explanatory videos for haircuts and techniques are increasingly used.

Digitisation issues (e.g. specifications on different technologies, know-how):

The fields of activity and competence requirements of hairdressers are visibly changing with the digitalisation of the working and professional world. In their work, they therefore increasingly deal with the following digital tools and technologies: online booking systems for making and organizing appointments, use of software for cash register management, use of social media and social networks for customer acquisition, sales, marketing and making appointments, use of software for displaying hairstyles, colours and styling, learning apps and explanatory videos to illustrate working techniques, augmented reality visualisation (e.g. suggesting new hair colours and hairstyles to customers using AR applications), mobile payment (e.g. to sell hair care products and services to customers).

Further training opportunities/courses: Hairdressers (stylists) constantly face new professional challenges. A requirement for success in this profession is to always keep up with the latest developments and to continuously supplement and deepen one's specialist knowledge, methodological competences and social skills. Further education institutions offer courses and training in many relevant areas, especially in business management and commercial subject areas. Larger companies in the sector, especially hairdressing chains, also offer in-house courses and training programmes, sometimes in their own academies, for the further and higher qualification of their employees. In addition, cosmetics manufacturers and suppliers regularly offer product training.

Alternative professions: Beautician, make-up artist, clothing designer, colour and type consultant, photo model (f/m/d), chiroprapist, costume designer, fashion model/male model, masseur, tattoo artist/piercer

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

Further information:

https://bic.at/berufsinformation.php?beruf=friseur*in_stylist*in_lehrberuf&brfid=231

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<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/suchergebnisse/kurzbeschreibung/trends&dkz=9910&such=friseur>

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<https://www.bildungssystem.at/schule-oberstufe/berufsschule-und-lehre>

<https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20007850>

<https://ifa.or.at/auslandspraktika/#tab-id-2>

Metal worker

Short job description: Metal workers produce building and construction parts from metals such as steel, iron or aluminium and copper. To do this, they use various metalworking processes such as cutting, welding, turning, milling, soldering or riveting. They create construction plans and technical drawings, control, operate and programme computer-aided systems and machines such as CNC machine tools.

Typical industries and operational areas: Metal workers work in workshops and production halls of commercial or industrial companies in metal and sheet metal processing and metalworking shops, but also in transport companies and in assembly work on construction sites.

Type of training: Training in the modular apprenticeship metal technology specialising in metal and sheet metal engineering comprises compulsory 2-year training in the basic module metal technology and 1.5-year training in the main module metal and sheet metal engineering. In addition, in a further half year of training, students can choose from the two special modules design technology and construction technology. 80% of the training takes place in the training company, 20% in the part-time VET school.

Duration of apprenticeship/training: 3.5 to 4 years (in Austria)

Required previous education / school-leaving qualification: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Craft lessons, Technical handicraft lessons, Physics, Digital basics

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Customer orientation, Willingness to learn, Ability to work under pressure, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Body control, Craft skills, Technical understanding, Drawing skills, Power of observation, Math understanding, Concentration, Analytical skills, Text comprehension, Linguistic comprehension, Security awareness

Interests: Technical interest, interest in physics, measuring, cutting and assembling metal parts;

Trends:

In the occupational field of metal workers, collaborative robots, so-called Cobots, are increasingly being used to work together with humans. They support them, for example, in tasks that are ergonomically difficult, monotonous, delicate or dangerous, and are also used to pass on components. Sophisticated sensors ensure that they come to a standstill at the slightest contact with humans.

Virtual reality technologies are used in particular in apprenticeship training, especially since virtual training, for example in the field of welding, is a cost-effective and risk-free training alternative. State-of-the-art CNC machines are among the most efficient and precise manufacturing technologies and are frequently used for the extensive automation of manufacturing processes (such as milling, turning and grinding), especially in the serial production of metallic workpieces. Due to the constant further development of CNC metal cutting technology, new fields of work are regularly emerging and interdisciplinary skills, such as CNC programming, are becoming increasingly important.

Digitisation issues (e.g. specifications on different technologies, know-how): The fields of activity and competence requirements are visibly changing with the digitalisation of the working and professional world. Metal workers therefore increasingly deal with the following digital tools and technologies in their work: Cobots (e.g. operation of robotic welding cells, operation of robotic arms in the production of metal pieces), control of automated grinding processes, 3D printing (e.g. production of complex components using additive manufacturing processes), 3D laser scanning (e.g. measurement and digitalisation of components), industrial robots (e.g. use and adjustment of industrial robots in the production of metal products), apps for calculations (e.g. calculation of welding parameters), real-time data systems (e.g. acquisition and analysis of production data), machine data acquisition – MDA (e.g. of CNC machines), programmable logic controller – PLC (e.g. for setting up machines), networked production systems (e.g. to obtain data for process optimization), apps for monitoring production processes and much more.

Further training opportunities/courses: Programming and operation of computer-controlled machine tools such as numerical control (NC), computerised numerical control (CNC), computer-aided design (CAD) or computer-aided manufacturing (CAM), simulation technologies, virtual reality, augmented reality, assistive technologies (robotic systems, automated logistics and manipulation systems), technical documentation, electronic data management (EDM), new manufacturing processes, production engineering, new materials, automotive engineering and automotive electronics, hydraulics, pneumatics and electropneumatics, etc.

Alternative training professions: Metal processing, technical designer (toolmaking technology, steel engineering, metal engineering, mechanical engineering), agricultural and construction machinery technology, mechatronics, aircraft engineering, etc.

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null>

<https://www.berufslexikon.at/berufe/3452-MetalltechnikerIn-Hauptmodul-Metallbautechnik-und-Blechtechnik/#weiterbildung>

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<https://www.techpilot.de/lexikon/zerspanung/>

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Electrical installations engineer

Short job description: Electrical installations engineers install, maintain and repair technical supply systems such as power supply, heating and air conditioning technology, lift technology, lighting and alarm systems, electrical locking systems and intercom systems in buildings, public facilities and at airports and railway stations. They check the systems at regular intervals and document the results in maintenance logs.

Typical industries and operational areas: Electrical and building engineers work in companies in the electrical installation trade, in industrial companies in all sectors, in transport companies and energy supply companies as well as for special maintenance and service companies.

Type of training: Training in the modular apprenticeship of electrical engineering specialising in electrical and building engineering comprises compulsory 2-year training in the basic module electrical engineering and 1.5-year training in the main module electrical and building engineering. In addition, in a further half year of training, students can choose from different special modules. 80% of the training takes place in the training company, 20% in the part-time VET school.

Duration of the apprenticeship/training: 3.5 to 4 years (in Austria)

Required previous education / school-leaving qualification: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Craft lessons, Technical handicraft lessons, Digital basics, Physics, Computer science

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Willingness to contact, Communication skills, Patience, Independent working

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Drawing skills, Power of observation, Organisational talent, Math understanding, Concentration, Dexterity, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension, Security awareness

Interests: Interest in technology and physics, interest in electricity, occupation with electronic devices and equipment

Trends:

In the future, intelligent power grids, so-called smart grids, will be increasingly used for the control and interconnection of power grids, power generation and power consumption. They enable exchange about the current operating status, energy consumption and energy demand.

Furthermore, smart meters are increasingly being used instead of analogue electricity meters to store and detect the current grid load. Equipping private households with smart meters has already been established within the framework of EU directives. Smart living or connected living is also becoming increasingly important. This refers to the connection of home appliances that are activated by Smartphones, tablets and sometimes by voice control. This also includes networked building technology such as security systems or water and humidity detectors that can report damage directly to those affected.

Artificial intelligence, however, plays an important role, especially for expanding renewable energies and increasing energy efficiency. Smarter analyses of sensor and weather data provide more precise forecasts of grid load and therefore increase grid stability and supply security. But predictive maintenance, optimisation of energy facilities and early detection of cyberattacks on power plants and energy grids are also among the areas where AI is used.

Digitisation issues (e.g. specifications on different technologies, know-how):

The fields of activity and competence requirements are visibly changing with the digitalisation of the working and professional world. Electrical installations engineers therefore increasingly deal with the following digital tools and technologies in their work: 3D printing (e.g. creation of surfaces with electronic components), 3D laser scanning (e.g. measurement of rooms for planning building technology), 5G technology (e.g. digital networking of technical building services equipment using 5G technologies), actuators (e.g. installation of actuators for control, safety and diagnostic functions), ambient assisted living – AAL (e.g. installation of smart home systems to make everyday life easier for elderly people and people in need of care),

augmented reality operation (e.g. for the maintenance of heating and air-conditioning systems with the help of virtually displayed information, e.g. by means of data glasses), connected buildings (e.g. installation of building automation systems, networking of housing and communication technology), connected living (e.g. networking of home appliances and installation of operating systems), real-time data systems (e.g. real-time evaluation of energy supply systems for the maintenance of process data), embedded systems (e.g. installation of system software for building automation equipment), IoT platforms (e.g. installation of analysis platforms), predictive maintenance (e.g. reduction of unplanned repairs and failures through ongoing data evaluation), sensor technology (e.g. installation of sensors in control systems), smart grid (e.g. installation of sensors, planning and control software and real-time data management systems for the intelligent generation, storage and distribution of electricity), smart metering (e.g. installation of smart meters), programmable logic controller – PLC (e.g. installation and configuration of control programs for automation systems), wearable technology (e.g. use of data glasses to support maintenance and repair work), service portals and apps (e.g. provision of technical documentation for customers; contact in the event of technical faults), microelectronics (e.g. installation of microchips for the control of building automation systems), drone technology (e.g. the use of drones for the inspection of solar systems), photonics (e.g. integration of optical sensors in control systems) and much more.

Further training opportunities/courses: CAD technology, CNC and NC technology, additive production processes (3D printing), simulation technologies, virtual reality/augmented reality in planning, maintenance and installation, programmable logic controller (PLC), electronic data management (EDM), bus technology, recycling, environmental protection, energy and resource efficiency and much more.

Alternative professions: Technical designer (electrical installations engineering, mechanical engineering, metal engineering), mechatronics, electronics, refrigeration installations technology, metal technology, process technology, event technology, cable car technology, sun protection technology, etc.

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

More information:

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<https://ifa.or.at/auslandspraktika/#tab-id-2>

Bricklayer

Short job description: Masons build structures or building elements such as residential and office buildings, roads, bridges and tunnels or sewage and drainage systems. They use natural stones, fired bricks, concrete, lightweight concrete and other shaped stones. They are also responsible for thermal insulation and plastering walls. In addition to the construction of new buildings, their tasks also include repair, restoration and conversion work on building components.

Typical industries and operational areas: Masons work for small and medium-sized companies in the building trade and for companies in the construction industry in building construction, civil engineering and hydraulic engineering. They are employed in smaller buildings as well as on large construction sites, where they work in a team (construction unit) with professional colleagues and with various skilled and unskilled workers in the construction industry.

Type of training: The training is in the apprenticeship occupation of building construction and mainly takes place in the training company (80%). At the same time, the apprentices attend part-time VET school (20%). Here they are taught the theoretical background that masons need to be successful in their profession.

Duration of the apprenticeship/training: 3 years (in Austria)

Required previous education / school-leaving qualification: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Craft lessons, Technology

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Ability to work under pressure, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Body control, Craft skills, Technical understanding, Math understanding, Linguistic comprehension, Health, Free of dizziness, Security awareness

Interests: Technical interest, interest in practical activities, interest in working with different stone materials

Trends:

The trends in the building trade lie, for example, in the further development of serial and modular planning, which shortens planning and construction times and makes building easier and cheaper. Many construction companies are already using digital building information modelling (BIM), which is used for the holistic planning and creation of a virtual, three-dimensional twin. Buildings and parts of buildings are therefore designed as prototypes and later built in series. The individual modules such as building walls, windows, balconies, etc. can be prefabricated in a factory and assembled on the building site. In addition, BIM enables networked cooperation of all those involved in the construction. Virtual reality glasses also enable a virtual advance inspection of the future building.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, masons will increasingly have to deal with new technologies that will change their field of work due to increasing digitalisation. These include: 3D printers (e.g. prefabrication of stuccowork); 3D laser scanning (e.g. measurement and digitalisation of building elements using 3D laser scanners), apps for planning and measurement (e.g. creation and transmission of measurements using mobile devices), apps for administration (e.g. recording working hours), wearable technology (e.g. use of exoskeletons to support heavy lifting work; use of data glasses to display reinforcement plans); drones (e.g. recording inaccessible parts of a building), VR glasses (e.g. virtual representation of future buildings), drilling robots (e.g. for particularly physically challenging tasks) and much more.

Further training opportunities/courses: BIM – building information modelling, assistive technologies (e.g. exoskeletons), automation in construction, construction technology (concrete technology, heat, cold, sound and fire insulation, etc.), application and operation of digital tools and devices, electronic data management (EDM), energy efficiency, renewable energies, interior fittings: building biology guidelines, natural, alternative building materials, sustainable construction, timber construction, building ecology and environmental protection, recycling and environmental protection, concrete technology, new formwork techniques and much more.

Alternative professions: Concrete construction, concrete construction specialist (structural concrete construction, reinforced concrete construction), building construction, building construction specialist (new construction, renovation, civil engineering), civil engineering specialist (construction machinery operation, sanitary engineering, transport route construction), etc.

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

Further information:

<https://berufenet.arbeitsagentur.de/berufenet/faces/index?path=null/suchergebnisse/kurzbeschreibung&dkz=3938&such=Maurer>

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<https://ifa.or.at/auslandspraktika/#tab-id-2>

Bicycle mechanic

Short job description: Bicycle mechanics repair and maintain bicycles. For this work, they replace worn or damaged mechanical and increasingly also electronic individual parts, restore them and check their functionality. They regularly service bicycles, replace brake cables, clean chains and ensure that the wheels are still roadworthy even after prolonged use. They use mechanical and electronic measuring devices and handle tools such as screwdrivers, spanners and pliers. They often work in bicycle workshops and in trade, where they also sell and advise customers on bicycles.

Typical industries and operational areas: Bicycle mechanics work in bicycle workshops, bicycle and sports shops and bicycle manufacturing companies.

Type of training: Since 2019, bicycle mechanics in Austria have had the opportunity to learn the apprenticeship occupation of bicycle mechatronics. The apprenticeship training mainly takes place in the training company (80%). At the same time, the apprentices attend part-time VET school (20%). Here they are taught the theoretical background that bicycle mechanics need to be successful in their profession. In addition, bicycle mechanics often have a technical apprenticeship diploma in the fields of vehicle engineering, metal technology, mechatronics, electrical engineering etc., some also have a school-based education in a related technical field. Adult education institutions offer training courses for bicycle mechanics.

Duration of the apprenticeship/training: Apprenticeship training in bicycle mechatronics: 3 years (in Austria), other relevant apprenticeships: 3 (to 4) years

Required previous education / school-leaving qualification: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Craft lessons, Digital basics, Physics, Technology

Required social competencies in order to practice the profession: Care, Flexibility, Team skills, Customer orientation, Sense of responsibility, Ability to work under pressure, Kindness, Comprehension, Communication skills, Patience, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Power of observation, Math understanding, Concentration, Logical thinking, Dexterity, Text comprehension, Linguistic comprehension, Health, Security awareness

Interests: Interest in vehicle engineering and bicycles, assembly, adjustment, maintenance and repair of bicycles, work with tools, oil and lubricants, sales and advice on bicycles and accessories

Trends:

Due to the boom in e-bikes, a wide range of special offers, increasingly high-quality equipment on bicycles and the generally strong trend towards cycling and the bicycle as an alternative means of transport in urban areas, the work of bicycle mechanics is once again in high demand. The increased demand is expressed, for instance, in the apprenticeship occupation of bicycle mechatronics introduced in 2019.

Increasingly, part of the work of bicycle mechanics also includes handling e-bikes, e-scooters or Segways, electronic circuitry, charging and maintaining electric motors. The development of digital technologies means bicycles are very much oriented towards cars; increasingly, under the catchphrase “connected bike of the future”, work is being done on intelligent technologies which inform about the status of the individual components, for example about the brakes not being effective or low tyre air.

Digitalisation issues (e.g. specifications on different technologies, know-how):

The fields of activity and competence requirements of bicycle mechanics are visibly changing with the digitalisation of the working and professional world. They deal with the following digital tools and technologies in their work: 3D printing (e.g. producing smaller spare parts with a 3D printer), narrowband IoT (e.g. installing narrowband IoT transmitters in bicycle frames), sensor technology (e.g. installing sensors for speed measurement in bicycles; maintaining sensors)

Further training opportunities/courses: The rapid technological change also covers bicycles, for example with the introduction of e-bikes and electronic shifting and damper systems. Manufacturers therefore offer training courses on new trends and products for bicycle mechanics in autumn and winter.

Alternative professions: Car salesperson, retail trade (motor vehicles and spare parts/sporting goods), electronics engineer, electrical engineering, bodywork engineering, motor vehicle expert, motor vehicle engineering (motorcycle engineering, commercial vehicle engineering, passenger motor vehicle engineering), mechanical engineer, machine operator, machinery mechanics, ski construction technology, sports equipment manufacturer/sports equipment fitter, sports technologist, tool mechanics, two-wheel vehicle engineer

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

Further information:

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<https://cs.netz98.de/netz98-bike-dossier-digitalisierung-der-bike-branche.pdf>

Motor vehicle engineer

Short job description: Motor vehicle engineers work mainly in motor vehicle workshops and carry out maintenance and repair work on motor vehicles (cars, trucks, buses, motorcycles, etc.), remove damaged parts that have become unusable and replace them with new ones. They advise customers on the necessary repairs and service work and check, maintain, repair and install mechanical, electrical and electronic components, such as engines, chassis, lighting, ignition and starter systems or alarm systems. They make adjustments to the engine, brakes or lighting system and carry out the service prescribed for motor vehicles by the manufacturer or the legally required safety and environmental inspection. In their work, they handle electronic measuring and testing equipment, but also hand tools such as screwdrivers, spanners, files, etc. In industrial companies, motor vehicle engineers also work in the production of motor vehicles.

Typical industries and operational areas: Motor vehicle engineers work in commercial motor vehicle workshops, companies in the automotive industry, transport companies and companies with their own large vehicle fleets, in vehicle fleets of public institutions and transport companies as well as in service facilities of automobile clubs.

Type of training: The training is in the apprenticeship occupation of motor vehicle engineering (modules: passenger motor vehicle engineering, commercial vehicle engineering or motorcycle engineering) and mainly takes place in the training company (80%). At the same time, the apprentices attend part-time VET school (20%). Here they are taught the theoretical background that motor vehicle engineers need to be successful in their profession.

Duration of the apprenticeship/training: 3.5 or 4 years (in Austria)

Required previous education / school-leaving qualification: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Craft lessons, Technical handicraft lessons, Digital basics, Physics, Technology, Computer science

Required social competencies in order to practice the profession: Care, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Communication skills, Patience, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Power of observation, Math understanding, Logical thinking, Analytical skills, Dexterity, Text comprehension, Linguistic comprehension, Health, Security awareness

Interests: Interest in motor vehicles, their components and their interactions, interest in (among other things, dirty) work in the workshop and with various tools on motor vehicles, work with electrical and digital system components

Trends:

The field of activity of motor vehicle engineers is changing due to the many new technological developments in the field of motor vehicle engineering:

exoskeletons, for example, are increasingly being used in vehicle manufacturing to assist motor vehicle engineers with unergonomic tasks such as fitting brake lines, screwing on underbody panels and applying corrosion and sealing protection. In the meantime, exoskeletons are also being tested which recognise the personal movement profiles of the users by means of special sensors and adapt better and better to the individual usage behaviour of the wearers by means of machine learning. Since these support robots are also to be integrated into Industry 4.0 processes via the cloud, they can also communicate with other machines such as drones or transport robots and, for example, ensure that they keep enough distance.

Additive manufacturing processes (3D printing) are already being used for the prototyping of vehicles and now also for the production of spare parts. Through 3D printing, three-dimensional objects can be produced based on digital information through the layer-by-layer application of materials. In vehicle service, spare parts such as fuel lines or elements of the cooling or heating system will therefore be available more quickly and at lower cost. In addition, parts that are no longer available on the market can be produced individually. In cars, trucks and buses, the trend is going from assistance systems to partially and highly automated driving onto fully automated vehicles equipped with self-learning technologies. Artificial intelligence makes it possible for computers to recognise even complex traffic situations and make decisions according to the situation.

However, numerous legal, social and infrastructural barriers still stand in the way of the widespread application of artificial intelligence. For the motor vehicle industry, this development means a high degree of readiness for innovation and further training. Another trend is the advance of electric mobility: cars and buses, commercial vehicles and trains, bicycles and motorcycles, ships and smaller aircraft are to be powered by electric energy in future – with batteries or fuel cells.

Augmented reality technology is also increasingly providing support for maintenance and repair work on drive and control systems in the automotive, aircraft and shipbuilding industries as well as in mechanical engineering and plant engineering and construction: with the help of mobile devices such as tablets, Smartphones or data glasses, virtual information is displayed in the field of vision of the service staff, such as new settings for a component or special repair instructions.

In the future, there could also be an increase in the use of voice assistance technologies that, thanks to machine learning, answer more complex questions, for example about the state of the machines. To be equipped for the applications of this technology, skilled personnel need to acquire the relevant knowledge.

Digitalisation issues (e.g. specifications on different technologies, know-how):

The fields of activity and competence requirements are changing for motor vehicle engineers because of the advancing digitalisation of the working and professional world. They therefore increasingly deal with the following digital tools and technologies in their work: 3D printing (e.g. producing spare parts for motor vehicles according to customer requirements and digital templates), actuators (e.g. installing actuators in motor vehicles; checking and replacing actuators), augmented reality operation (e.g. carrying out maintenance on motor vehicles with the aid of data glasses or tablets), automatic identification – Auto-ID (e.g. identifying components automatically as part of the monitoring and maintenance of motor vehicles), connected cars (e.g. checking and replacing networking systems in motor vehicles), embedded systems (e.g. checking and maintaining embedded systems of motor vehicles), driver assistance systems – DAS (e.g. checking and maintaining driver assistance systems installed in motor vehicles), IoT platforms (e.g. checking and maintaining motor vehicles networked with IoT platforms), lidar technologies (e.g. installing lidar technologies in motor vehicles; checking and replacing lidar systems), predictive maintenance (e.g. minimising unplanned breakdowns and repairs through ongoing evaluation of motor vehicle data), sensor technology (e.g. installing sensors in motor vehicles; checking and replacing sensors)

Further training opportunities/courses: Motor vehicle engineers have to constantly supplement and deepen their relevant skills in order to keep up to date. Further education institutions offer numerous courses and training programmes on relevant technical and commercial topics, e.g. in the fields of vehicle engineering (engine technology, brake systems, automotive electronics, air conditioning technology) as well as in business administration and corporate management. Institutions such as the Austrian Society of Automotive Engineers regularly hold seminars and lectures on new developments in automotive and engine technology.

In addition, welding courses are offered, for example, by the Central Welding Institute (Schweißtechnische Zentralanstalt, SZA) in Vienna. Many companies also conduct in-house training or offer motor vehicle manufacturers and distributors the opportunity of training courses on new models and vehicle technologies.

For motor vehicle engineers in small and medium-sized enterprises, customer advice and support is also becoming increasingly important. Attending an industrial master college or preparing for the master craftsperson exam as well as further training courses in related occupations can also be considered as further training and higher qualification options.

Opportunities for higher vocational qualifications are also offered by preparatory and add-on courses for people in employment at colleges of higher vocational education, especially at colleges of engineering. In addition to a higher specialist qualification, the completion of an add-on course (3 years) is also associated with the matriculation certificate, which enables holders to study at universities of applied sciences and universities (e.g. in vehicle engineering, mechatronics, electronics).

Alternative professions: Motor vehicle driver (goods transport/passenger transport), electronics, bicycle mechatronics, vehicle construction engineer, vehicle electronics engineer, bodywork engineering, technical designer (mechanical engineering/toolmaking technology), mechanical engineer, mechatronics engineer, agricultural and construction machinery technology (construction machinery/agricultural machinery), aircraft engineering, mechatronics, metal technology, service technician, two-wheel vehicle engineer

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

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<https://ifa.or.at/auslandspraktika/#tab-id-2>

Stonemason

Short job description: Stonemasons work with natural and artificial stone for architecture and construction, gardening and landscaping, interior design and furnishing, cemeteries and graves, restoration and monument preservation, as well as for art and design. They work their material with hand tools or machines, shape and design, inscribe and ornament, lay and move the work pieces and restore historical monuments.

Typical industries and operational areas: Stonemasons work in small and medium-sized companies in the stonemasonry trade, but also in the natural stone industry. They work in quarries, workshops and production halls and in laying, moving and restoration activities on site with their clients, often working outdoors. When making monuments or other special stone products, they may also work together with artists or wood and stone sculptors.

Type of training: The training is in the apprenticeship occupation of stonemason and mainly takes place in the training company (80%). At the same time, the apprentices attend part-time VET school (20%). Here they are taught the theoretical background that stonemasons need to be successful in their profession. The apprenticeship occupation of stonemasonry technology, which was introduced in 2018, deals with the technological processing of stones: they work with computer-aided tools (CNC machines) or CAD systems in both planning and production and deal with the entire process handling for the production of stone products.

Duration of the apprenticeship/training: 3 years (in Austria)

Required previous education / school leaving certificate: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Craft lessons, Technology, Physics, Biology, Art, Sport

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Creativity, Communication skills, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Body control, Craft skills, Technical understanding, Drawing skills, Power of observation, Math understanding, Dexterity, Linguistic comprehension, Aesthetics, Health, Free of dizziness, Security awareness

Interests: Interest in skilled manual work and working with stone materials, working with machines and tools (e.g. chisel or angle grinder), sense of aesthetics and style

Trends:

CNC machines are already used in stone processing for milling and drilling work and will be increasingly used in smaller companies in the future thanks to the expansion of CNC-controlled sawing plants with the addition of milling units. Due to the constant development of CNC technology, interdisciplinary skills such as CNC programming are becoming increasingly important. Work is also being done on the development of additive manufacturing technologies such as 3D printing, for example for the application area of monument preservation. 3D printers are already producing models, templates, samples or prototypes in some natural stone processing companies. The model data for 3D printing is generated, for example, using CAD and modelling programs as well as 3D scanners.

Meanwhile, augmented and virtual reality are increasingly being used in customer consulting, for example the 3D viewing of virtual workpieces and samples at the desired location. The apprenticeship occupation of stonemasonry technology introduced in 2018 can be understood as an expression of the increased technologisation of the field of activity. Stonemasonry technology deals with the planning and production with computer-aided tools (CNC machines) or CAD systems and the overview of the entire process handling for the production of stone products.

Digitalisation issues (e.g. specification on different technologies, know-how):

The fields of activity and competence requirements are visibly changing with the digitalisation of the working and professional world. Stonemasons therefore increasingly deal with the following digital tools and technologies in their work: 3D laser scanning and apps for planning (e.g. taking measurements and transmitting them digitally), apps for monitoring production processes (e.g. monitoring networked production facilities), CAD software (e.g. creating technical drawings), CNC machines (e.g. milling complex shapes and decorative elements; cutting stone with CNC waterjet cutting), digital document management systems – DMS (e.g. documentation and management of information on construction sites in digital construction files), exoskeletons (e.g. transport and installation of natural and cut stones), robotic systems (e.g. lifting and laying heavy loads), programmable logic controller – PLC (e.g. setting up and programming automatic grinding systems), wearable technology (e.g. use of data glasses for virtual views of buildings), etc.

Further training opportunities/courses: CAD technology, computer-aided machine control, automation (CNC, CAM), production technology, application and operation of digital tools and equipment, digital measuring and testing methods, product development, product design, stone processing, stone processing techniques, new materials, energy and resource efficiency, resource-saving production technology, technical drawing, environmental protection, disposal and recycling, monument protection, restoration and conservation, and much more.

Alternative professions: Stonemasonry technology, sculpture, tile setter, stoneware designer, ceramist, stove fitter, construction engineer, etc.

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

Further information:

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<https://job-futuromat.iab.de/#top>

Glazier

Short job description: Glaziers carry out both new glazing and repair and maintenance work on existing glazing. They glaze exterior areas of buildings (e.g. door, window, shop window glazing, façades) and install glass roofs and other glass constructions. They make furniture, sliding doors, decorative glazing, railings, etc. for interior fittings, mirrors and picture glazing and vehicle glazing. They produce sketches and designs, transport glass plates to the place of use and handle glass cutting machines, glass saws and glass drills.

Typical industries and operational areas: Glaziers are mainly employed in small, medium-sized and large glazier's businesses and industrial glass processing companies. They work together with their colleagues in the workshops of glazier's businesses and in the production halls of industrial glass processing companies. For façade and exterior glazing on buildings, they also work directly on building sites with skilled workers in the building trade.

Type of training: The training is in the apprenticeship occupation of glass building technology and mainly takes place in the training company (80%). At the same time, the apprentices attend part-time VET school (20%). Here they are taught the theoretical background that glaziers need to be successful in their profession.

Duration of the apprenticeship/training: 3 or 4 years (in Austria)

Required previous education / school leaving certificate: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Craft lessons, Technology, Physics, Digital basics

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Creativity, Comprehension, Communication skills, Patience, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Body control, Craft skills, Technical understanding, Drawing skills, Math understanding, Linguistic comprehension, Concentration, Health, Free of dizziness, Security awareness

Interests: Interest in working with glass and glass-processing machines, interest in the manufacture and processing of products made of glass, planning and designing glass products, installing glass plates at construction sites, working with millimetre precision

Trends:

The occupational field of glaziers is changing due to digital measuring, planning and cutting technologies. In measurement technology, glaziers now work with digital measuring devices in order to be able to illustrate rooms. This information is then further processed with specific software (e.g. AutoCAD) for further planning. Cutting technology has also changed: in the past, glaziers used to cut the glass by hand with glass cutters, but today they usually use fully automatic grinding machines and CNC machines.

Digitalisation issues (e.g. specifications on different technologies, know-how):

The fields of activity and competence requirements are visibly changing with the digitalisation of the working and professional world. Glaziers therefore increasingly deal with the following digital tools and technologies in their work: apps and tools for planning (e.g. AutoCAD) and measurement (e.g. taking measurements directly at the customer's premises and transmitting them digitally), augmented reality operation (e.g. carrying out machine maintenance with the aid of data glasses or tablets), collaborative robots – Cobots (e.g. working with Cobots for the installation of glass windows and doors), smart glass and ceramic technologies (e.g. handling smart glass products), programmable logic controller – PLC (e.g. setting up and programming automatic cutting machines), wearable technology (e.g. monitoring CNC machines using data glasses)

Further training opportunities/courses: Glaziers constantly face new professional challenges. A requirement for success in this profession is to always keep up with the latest developments and to continuously supplement and deepen one's specialist knowledge, methodological competences and social skills. Continuing education and training opportunities in various relevant areas are offered by various further education institutions. Many glass building companies also provide regular internal training on products, materials and processing methods, or offer manufacturing companies the opportunity to provide product training. Opportunities for higher vocational qualifications are also offered by preparatory and add-on courses at colleges of higher vocational education (colleges of engineering – HTLs) or industrial master colleges. In addition to a higher specialist qualification, the completion of an add-on course is also associated with the matriculation certificate, which enables holders to study at universities of applied sciences and universities.

Alternative professions: Glass-blower and glass instruments maker, glass designer, glassworks technician, glass manufacturing, glass process engineering (flat glass processing/hollow glass production), hollow glass finisher (engraving/glass spheres), ceramist (architectural ceramics/utility ceramics/industrial ceramics), materials technician

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

Further information:

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<https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20007850>

Floor layer

Short job description: Floor layers lay carpets, linoleum, PVC, wooden floors, laminate flooring, etc. as well as the corresponding skirting boards in residential and commercial premises. They advise customers on their choice, remove old coverings, create a level subfloor (screed) or renovate the existing subfloor. They calculate the amount of material needed, cut the coverings to size and glue them to the subfloor. They are also responsible for surface treatment and the disposal of old coverings.

Typical industries and operational areas: Floor layers work in specialist companies in the floor-laying trade or in specialist shops for floor coverings or interior design. They carry out the laying work on site in residential and commercial premises or on building sites.

Type of training: The training is in the apprenticeship occupation of floor layer and mainly takes place in the training company (80%). At the same time, the apprentices attend part-time VET school (20%). Here they are taught the theoretical background that floor layers need to be successful in their profession.

Duration of the apprenticeship/training: 3 years (in Austria)

Required previous education / school leaving certificate: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Craft lessons, Biology, Chemistry, Sport

Required social competencies in order to practice the profession: Care, Flexibility, Team skills, Customer orientation, Willingness to learn, Kindness, Willingness to contact, Sense of order, Creativity, Ability to make decisions, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Body control, Craft skills, Drawing skills, Power of observation, Math understanding, Concentration, Dexterity, Linguistic comprehension, Health, Security awareness

Interests: Interest in skilled manual work, interest in working with wood and cork, carpet, plastic, concrete and screed, interest in aesthetics and style

Trends:

Augmented reality is increasingly being used to offer visualisations of floor coverings in the desired room. When advising customers, coverings can be visualised in photos of the customer's premises using apps, for example, in order to help them select appropriate products. For this purpose, virtual showrooms are also set up in which customers can virtually visit entire rooms with the help of virtual reality data glasses. In the virtual representation, customers can also make their own adjustments directly.

3D laser scanning for measuring floors and entire rooms is being continuously improved and is increasingly being used as a basis for creating digital twins.

Digitalisation topics (e.g. specification on different technologies, know-how):

The fields of activity and competence requirements are visibly changing with the digitalisation of the working and professional world. Floor layers therefore increasingly deal with the following digital tools and technologies in their work: 3D laser scanning (e.g. three-dimensional measurement of floors to make unevenness virtually visible), apps for planning and measurement (e.g. taking measurements on site with a mobile device), augmented reality visualisation (e.g. showing the planned floor work to the customer on site via an AR view using a tablet), electronic data management – EDM (e.g. recording of working hours), smart tool systems (e.g. Bluetooth connection of devices and apps for operating vacuum cleaners, locating devices, maintenance reminders, etc.), AI technology (e.g. online visualisation of floor coverings in room images of customers), wearable technology (e.g. use of data glasses for AR views of installation plans), etc.

Further training opportunities/courses: Electronic data management (EDM), application and operation of digital tools and equipment, building ecology and sustainable building materials, environmental protection, disposal and recycling, new materials for flooring (e.g. PVC, laminate, wood), new insulation materials, screed and footfall sound insulation, technical documentation, bookkeeping and cost accounting, data security and data protection, quality assurance, etc.

Alternative professions Paper-hanger and decorator, tile setter, joinery, carpentry, building construction, paver, interior fitter, stucco plasterer and drywaller, etc.

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

Further information:

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<https://ifa.or.at/auslandspraktika/#tab-id-2>

Butcher

Short job description: Butcher cut up the carcasses and prepare the meat for sale or process it into meat and sausage products. They skin and bleed the carcasses, remove the offal and cut up the slaughtered animal professionally in compliance with hygiene regulations. In small companies, butchers do this work by hand, while in larger industrial companies they use electrical equipment (saws). In meat and sausage production, they chop, cook, scald or smoke the meat and add other ingredients, seasonings and preservatives depending on the recipe. Their activities also include filling, packaging and storing the meat and sausage products.

Typical industries and operational areas: Butchers work in slaughter rooms and processing halls in companies in the butchery trade or the meat processing industry. Sometimes they also work in commercial kitchens and supermarkets. They work together with colleagues and assistants (e.g. meat workers), warehouse workers, and have contact

Type of training: The training is in the apprenticeship occupation of meat processing and mainly takes place in the training company (80%). At the same time, the apprentices attend part-time VET school (20%). Here they are taught the theoretical background that butchers need to be successful in their profession.

Duration of the apprenticeship/training: 3 years (in Austria)

Required previous education / school leaving certificate: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Craft lessons, Biology, Sport, Nutrition

Required social competencies in order to practice the profession: Care, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Work under pressure, Creativity, Comprehension, Communication skills, Sense of Order, Independent working, Motivation

Required skills in order to practice the profession: Handicraft, Eye-hand-coordination, Body control, Craft skills, Technical understanding, Drawing skills, Power of observation, Math understanding, Concentration, Logical thinking, Dexterity, Analytical skills, Linguistic comprehension, Health, Security awareness, Hygiene awareness

Interests: Interest in working with meat (cutting, boning, etc.) and checking for quality and shelf life; compliance with hygiene guidelines; production of food and development of recipes for the production of meat and sausage products

Trends:

The occupational field of butchers is changing, especially in the area of operational processes. Ordering, delivery note creation and systematic planning of offer prices are digital applications that support butchers, in addition to online presences on social media. The automation of manufacturing processes by means of networked production systems increases production output and warehouse management systems provide support for stock management.

Digitalisation issues (e.g. specifications on different technologies, know-how):

The fields of activity and competence requirements are visibly changing with the digitalisation of the working and professional world. Butchers still work very much by hand but are supported by various digital tools: apps and tools for sales and distribution (e.g. www.meatapp.de, pre-ordering apps) help to market products; stationary or mobile robot-controlled sales boxes (Roberta) support sales; automated inventory control can be done by automated collection and evaluation of data for goods receipt, goods issue, stocktaking and inventory entries; primal cutting is started in the slaughterhouse by industrial robots (KUKA); networked production systems help improve production output; software for managing stocks and storage locations (warehouse management systems) simplifies internal processes

Further training opportunities/courses: Butchers constantly face new professional challenges. A requirement for success in this profession is to always keep up with the latest developments and to continuously supplement and deepen one's specialist knowledge, methodological competences and social skills. The Food Academy of the Austrian Trade offers specialized further education. In addition, this is also possible by attending expert conferences and industry events or by reading trade magazines. Further education in the fields of commerce and business (e.g. business management, sales and marketing) is offered, for example, by the Institute for Economic Promotion (WIFI) and the Vocational Training Institute. Opportunities for higher vocational qualifications are also offered by preparatory and add-on courses at colleges of higher vocational education (colleges of food and biotechnology, colleges of business administration) or industrial master colleges. In addition to a higher specialist qualification, the completion of an add-on course is also associated with the matriculation certificate, which enables holders to study at universities of applied sciences and universities.

Alternative professions Gastronomy expert, meat sales, cook, retail (sale of gourmet food), meat inspector and trichinae inspector, agriculture, food inspection body, food technician;

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

Further information:

https://www.bic.at/berufsinformation.php?beruf=fleischverarbeitung_lehrberuf&brfid=1489&tab=1

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<https://www.bildungssystem.at/schule-oberstufe/berufsschule-und-lehre>

<https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20007850>

<https://ifa.or.at/auslandspraktika/#tab-id-2>

Joiner

Brief job description: Joiners make furniture, windows, doors, wooden ceilings, floors and components from wood according to plans and work drawings and assemble the parts in the workshop or on-site at their customers' premises. They also carry out repair work on these products. Joiners make sketches of their workpieces, select the right types of wood and materials and use various woodworking techniques such as planing, sawing, sanding, pressing, etc. They handle various manual and electrical tools and equipment. In the field of industrial manufacturing, they also operate computer-assisted woodworking machines, painting robots and industrial robots.

Typical industries and areas of application: Joiners work in companies in the joinery trade or in the woodworking industry in workshops, factory halls or on-site at customers' premises. They work in a team with colleagues as well as with various skilled and unskilled workers.

Type of training: The training is in the apprenticeship occupation of joinery and mainly takes place in the training company (80%). At the same time, the apprentices attend part-time VET school (20%). Here they are taught the theoretical background that joiners need to be successful in their profession.

Duration of training: 3 years (in Austria)

Required previous education / school-leaving qualification: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Craft lessons, Technical handicraft lessons, Biology, Physics, Chemistry, Art

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Customer orientation, Willingness to learn, Kindness, Creativity, Comprehension, Sense of order, Ability to make decisions, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Drawing skills, Power of observation, Math understanding, Logical thinking, Dexterity, Linguistic comprehension, Health, Security awareness

Interests: Interest in working with wood (planing, sawing, chiselling, drilling, etc.) and in designing, planning and producing workpieces; carrying out functional checks and quality tests; handling and maintaining tools, equipment and machines; interest in advising customers and assembling workpieces on-site

Trends:

The occupational field of joiners is changing, especially in the area of production and operational processes. While on-site assembly at the customer's location is very much by hand, most joinery businesses now use CNC machines in production, for example to be able to automatically mill holes in components. During the discussion with customers, 3D drawings are made using AutoCAD so that the customers can get a better picture of workpieces and furnishing options and the entered dimensions automatically lead to a calculation of the material.

In addition to the occupation of joinery, there is also the occupation of joinery technology. In this 4-year apprenticeship, in addition to the basics of woodworking, in-depth knowledge of organisational and technical areas is also taught in order to be able to control a comprehensive production process.

Digitisation issues (e.g. specifications on different technologies, know-how):

The fields of activity and competence requirements are visibly changing with the digitalisation of the working and professional world. Joiners continue to work by hand, but are supported by various digital tools and machines:

apps and tools help in discussions with customers: models of pieces of furniture, kitchens or other furnishing parts make it easier to plan rooms (by means of 3D drawings using AutoCAD) and help customers make decisions. Apps and tools also help with planning and measurement: measurements are taken on-site with a mobile device and the data is automatically processed in the cloud. User knowledge of programmable logic controllers (PLC) is necessary for work preparation to set up CNC machines for woodworking (to be able to automatically mill holes in different materials (wood, plastic, metal, etc.)). Painting robots are used for surface treatment. To be able to operate these, joiners need user knowledge of the program. New technologies in kitchens (electrically operated fronts and drawers, garbage disposal units, automatic vacuum cleaners, etc.) require them to have user knowledge in the field of electrics.

Further training opportunities/courses: Joiners constantly face new professional challenges and should always keep up with the latest developments and continuously supplement and deepen their specialist knowledge, methodological competences and social skills. In addition to attending a master craftsman school and taking the part-time industrial master examination, joiners can also continue their education, for example, at the Institute for Economic Promotion (WIFI) and the Vocational Training Institute through specialized courses (milling, furniture and interior design, restoration of historical period and rustic furniture, wood surface treatment, wood turning, wood purchasing and wood identification, etc.).

In some cases, the respective provincial guilds of the Economic Chamber also organize seminars and courses on new technologies/techniques, materials and products. For continuing vocational education and training, many companies provide regular internal training on products, materials and processing methods, or offer manufacturing companies the opportunity to provide product training.

Opportunities for higher vocational qualifications are offered, for example, by preparatory and add-on courses at colleges of higher vocational education (colleges of engineering – HTLs) as well as building craftsman schools for people in employment, e.g. in the areas of construction engineering or wood technology. In addition to a higher specialist qualification, the completion of an add-on course is also associated with the matriculation certificate, which enables holders to study at universities of applied sciences and universities.

Alternative professions: Joinery technology, boat builder, cooper, prefabricated housing construction, wood turner, wood technician, wood scientist, carpenter, carpentry technician, furniture construction technician, stage designer

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

Further information:

<https://www.bic.at/berufsinformation.php?brfid=1484>

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https://berufenet.arbeitsagentur.de/berufenet/faces/index;BERUFENETJSESSIONID=SPfSMGyp95wvaMTz0a_TjLrKOW0_UXBLqOCqJyF1IMYSfH1XYh-T!-974625820?path=null/suchergebnisse/kurzbeschreibung&dkz=4460

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<https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20007850>

<https://ifa.or.at/auslandspraktika/#tab-id-2>

Carpenter

Short job description: Carpenters work mainly with wood, but also with plasterboard and plastic panels, metals and insulating materials. Carpentry specialists read the work plans and determine the material requirements of the workpieces. They select the appropriate type of wood, cut the wooden parts to size and join them by nailing or with mortise and tenon joints to produce wooden constructions and wooden buildings. They make roof trusses, stairs, ceilings, wall cladding, floors or concrete formwork for concrete work components. They also produce components of prefabricated houses, assemble them on-site and insulate the components with thermal, sound or fire protection panels. Carpentry specialists work in a team with colleagues as well as with skilled and unskilled workers in construction and timber construction.

Typical industries and operational areas: Carpenters work in companies in the timber construction trade, the building trade and the timber construction industry. They work in workshops and on construction sites and often work on ladders, scaffolding and roof structures.

Type of training: The training is in the apprenticeship occupation of carpenter and mainly takes place in the training company (80%). At the same time, the apprentices attend part-time VET school (20%). Here they are taught the theoretical background that carpenters need to be successful in their profession.

Duration of the apprenticeship/training: 3 years (in Austria)

Required previous education / school-leaving qualification: Entry into an apprenticeship is possible after completing 9 years of compulsory schooling. Successful completion of a middle school, prevocational school or the 9th school year in another school is not compulsory but significantly increases the chances of getting an apprenticeship.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Craft lessons, Technical handicraft lessons, Physics, Art, Sport

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Kindness, Ability to work under pressure, Creativity, Comprehension, Communication skills, Sense of order, Ability to make decisions, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Body control, Craft skills, Technical understanding, Drawing skills, Math understanding, Concentration, Logical thinking, Dexterity, Health, Free of dizziness, Security awareness

Interests: Interest in working with wood and other building materials (measuring, cutting to size, insulating, joining, sealing, etc.); designing, planning and producing wooden structures and buildings (roof trusses, stairs, bridges, etc.); carrying out wood preservation work, renovation and repair work, working accurately

Trends:

Compared to other construction systems, wood frame construction is a simple and efficient method of building a house. As a renewable building material, wood is a popular choice among customers and, in addition to good thermal insulation, also ensures a healthy indoor climate. Sectioning is gaining in importance due to the short construction time on-site. Here, an exact way of working in the planning stage is particularly important because a mistake can lead to the sections (which are industrially produced and assembled into a building on the construction site) not fitting together in the end.

For the joinery (transition and seal between wall and woodwork), the work preparation is done by means of an Auto-CAD program and the data is forwarded to the CNC machine. For planning and measuring on-site, mobile devices are used that create the measurement via apps and forward the data to planning programs.

By means of 3D laser scanning, measurements of a roof truss can be carried out and a three-dimensional image created. In addition to the occupation of carpentry, the occupation of carpentry technology also exists in Austria. In this 4-year apprenticeship, apprentices are taught the basics of woodworking as well as in-depth knowledge of multi-storey timber construction and the planning, construction and calculation of wooden buildings.

Digitisation issues (e.g. specifications on different technologies, know-how):

The fields of activity and competence requirements are visibly changing with the digitalisation of the working and professional world. Carpenters continue to work by hand, but are supported by various digital tools and machines: apps and tools provide support for planning and measurement: measurements are taken on-site with mobile devices and the data is automatically processed in the cloud (e.g. hsbDesign). CAD programs are used for work preparation, which is necessary for the correct processing of the wood in CNC machines, e.g. to ensure precise joinery (e.g. using hsbAbbund). User knowledge of programmable logic controllers (PLC) is necessary to set up CNC machines for woodworking.

Further training opportunities/courses: Carpenters should always keep up with the latest developments and continuously supplement and deepen their specialist knowledge, methodological competences and social skills. As the construction sector is subject to seasonal fluctuations, further training can protect against seasonal unemployment. In addition to attending a master craftsman school and taking the part-time industrial master examination in the fields of construction/timber construction, wood technology/energy efficiency and wood technology/production, carpenters can also continue their education, for example, at the Institute for Economic Promotion (WIFI) and the Vocational Training Institute (BFI).

Guilds and manufacturing companies offer courses on new technologies/techniques, products, materials and processing methods. Further training events in the field of building biology are held at the Austrian Institute for Building Biology and Ecology, and those interested in the building sector can obtain further training at the Building Academy.

Opportunities for higher vocational qualifications are offered, for example, by preparatory and add-on courses at colleges of higher vocational education (colleges of engineering – HTLs) as well as building craftsperson schools for people in employment, e.g. in the areas of construction engineering or wood technology. In addition to a higher specialist qualification, the completion of an add-on course is also associated with the matriculation certificate, which enables holders to study at universities of applied sciences and universities.

Alternative professions: Carpentry technology, joiner, joinery technology, boat builder, concrete construction, building construction, prefabricated housing construction, wood technology

Training abroad: The association IFA (International Young Workers Exchange) organises subject-related company placements for several weeks abroad for apprentices from the age of 16 and supports apprentices in the handling of Erasmus+ funding.

Further information:

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<https://ifa.or.at/auslandspraktika/#tab-id-2>

3. Selected core training professions from the commercial vocational field

The professional profiles described below were identified by the project partner from Slovenia (see detailed table above) and described with a focus on the Slovenian VET system. In relation to the commercial vocational field, professions from direct sales as well as from other commercial areas were identified that are affected by digitisation and may be known as training professions in other EU countries. In some cases, professions are shown that can be described as second training or advanced training and that require general commercial training as a basis. With regard to the aspects of training duration, type of training and further training opportunities, the representations refer to Slovenia and may need to be adapted for other countries and their VET systems if necessary.

Real-estate agent (sales person)

Short job description: Real-estate agents are licensed salespeople who deal with the sale or rental of land or buildings for clients. They are responsible for all commercial and legal proceedings that accompany the sale/rental process – assessment/evaluation, legal documentation. They are bridging the gap between owners and buyers/renters.

Typical operational areas: The real-estate market is very diverse (segmented) as it encompasses all land and buildings e.g. industrial, farming, business and residential properties. It is common for agents to cooperate in form of real-estate agencies, which usually focus on a specific segment of the real-estate market, whether it is by type or region. They also work at real estate developers, housing associations, industrial building management, city/local government, etc.

Type of training: Real-estate agent is a recognized training profession that is assigned to the Chamber of Commerce and Industry in Germany. In Germany, dual training takes place in the company and at the vocational school.

In Slovenia this profession is highly regulated, it requires in Slovenia a license to practice, which is issued upon meeting a specific set of criteria – acquiring a higher vocational education, passing a real-estate license examination and providing a certificate of no previous convictions (relating to economic and property crimes, resulting in imprisonment longer than 3 months). If the higher vocational education criteria is not fulfilled, alternatively, the applicant for the license can substitute the criteria by providing proof of 3 years' work experience relating to purchasing/sale of real estate. In this case, the applicant has to get approval from the Ministry of the Environment and Spatial Planning. After acquiring the license, the licensed agent is then entered into the national registry of real-estate agents. Although real-estate business is commercial in its essence, the real-estate licensing is fully supervised and regulated by the Ministry of the Environment and Spatial Planning, not the Ministry of Economic Development and Technology. Training for the license examination is organized within the Chamber of Commerce as well as several lifelong learning institutions. Real-estate agents are mandated to undergo additional training every 5 years (or pending changes of regulation pertaining to the knowledge required to acquire real-estate license).

Duration of the apprenticeship/training: In Slovenia it is depending on fulfillment of required criteria; training for the license usually takes 50-60 hours; absence of higher vocational education prompts a requirement of 3 years of work experience in the field. Foreign real-estate agents, coming from a country where the real-estate profession is not regulated, who are applying to get their professional qualifications recognized, require a professional vocational training or have at least 1 year of work experience in the field within the past 10 years. (In Germany 3 years)

Required previous education / school leaving certificate: In Germany: Good General Certificate of Secondary Education or High-school diploma. In Slovenia higher vocational education (associate degree, secondary vocational degree) i.e. General Certificate of Secondary Education

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Economics, National language

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Willingness to contact, Empathy, Communication skills, Negotiation skills, Patience, Ability to deal with conflicts, Sense of order, Ability to make decisions, Assertiveness, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Drawing skills, Power of observation, Organisational talent, Math understanding, Concentration, Orientation Sense, Commercial skills, Linguistic thinking, Analytical skills, Text comprehension, Linguistic comprehension

Interests: Real-estate market, property value trends, property assessment, property taxes, communication, negotiation, mediation, contract law, building management. And beyond that, planning advertising campaigns, calculations, conducting and advising customer meetings, handing over apartments, quality checks

Trends:

Although there have been minor tendencies to include Virtual Reality (VR) and Augmented Reality Technologies (AR) into the real-estate market before the Covid pandemic, the need to enable virtual real-estate tours and connect with customers/buyers remotely has shifted this trend into high gear. VR/AR property tours have enabled agents to offer customers remote timesaving property sightings with no travelling costs, costly physical models and offering more insight, options and information via AR enhancements (e.g. replacing windows/furniture/floor and wall coverings/etc., seeing the property during different times of the day). To provide better data security, the technology behind the land registry is also experiencing changes as block chain technology is gaining momentum to replace physical ledgers.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the recent few years, national land registries in the EU have undergone complete digitization, requiring real-estate agents to improve their computer skills by working in a digital environment (fully digital land register, no physical ledgers, electronic land conveyance). Real-estate agents will also have to adapt to providing digital counterparts to their in-person tours – virtual 3D models of properties, virtual (VR and AR) tours, connecting with clients in a digital environment (video/webconference, virtual reality spaces). Property advertising and connecting to potential clients has also already shifted to online platforms/portals/forums, creating a digital marketplace with its intrinsic trends and fluctuation (pricing, availability).

Further training opportunities/courses: For real-estate agents dealing mostly with houses and land property, further training in construction, spatial planning and real-estate appraisal are available. In Germany there is still the possibility to become a real estate specialist or business economist.

Alternative professions: Real-estate broker (work related solely to the paperwork and legislature, employing agents as salespeople/representatives), legal counsellor (only advising in the process), building manager, real-estate counsellor, real-estate appraiser

Training abroad: Due to the specifics of respective national legislatures concerning land property (laws, registries) there are no opportunities for real-estate agents to further their knowledge by training abroad, only through self-initiated research – mostly in regions neighboring other countries (pertaining to sale/purchase of land in neighboring countries). There are few courses offered in Denmark, Estonia, Ireland, Latvia, Poland, Austria, Spain, Hungary and the UK. And also the possibility of the additional qualification "European Assistant".

Further information:

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Direct sales representative

Short job description: Direct sales representatives determine the needs and wishes of potential customers and, considering supply, knowledge, and experience, offer products or services. Potential buyers have to be informed in a transparent (advantages and disadvantages, pricing, payment options), professional (purpose), explanatory (use) and communicatively non-ambiguous manner. A direct sales representative usually sells products from various brands or different services, either wholesale or retail and acquires information about the company they represent and the product or service they offer, analyzes the market, competition and purchasing power of the area they visit, keeps a record of potential buyers and determines the most appropriate time to visit, visits clients based on a prior telephone conversation or offers products or services door-to-door.

Typical operational areas: A direct sales representative works in the field, representing a single or multiple companies. Products (i.e. food, textiles, books and printed materials, construction, furniture) and services (supplementary education programs, insurance, stockbroking) are offered either to individual customers (retail) or to large store chains, specialized stores or departments, companies or educational organizations (wholesale). To boost their sales, direct sales representatives can use samples, catalogues, brochures, presentations and other advertising materials or they can set up a mobile stand to offer the product directly themselves.

Type of training: To successfully work in this profession, one has to have expert theoretical knowledge of commercial and trade operations, familiarity with the complete sales process (from receipt to delivery of goods/services), a firm grasp on the psychology of sales and knowing how to resolve complaints and returns. The basis is preferably a basic commercial training or a degree and relevant professional experience in the respective industry. Due to the variety of products and/or services they offer, direct sales representatives have many different apprenticeships and trainings available, most often with the company they represent (in forms of trainings, seminars, apprenticeships).

Duration of the apprenticeship/training: The training can take weeks or months, depending on the complexity of the sales process.

Required previous education / school leaving certificate: Direct sales representatives can have very different levels of previous education, acquiring education as salespersons, economic technicians or almost any secondary education program in the commercial field.

Required school subjects, in which subjects potential trainees should perform well:

Mathematics, Economics, National language

These depend greatly on the type of products and/or services direct sales representatives offer – considering the individual with previous familiarity with the subject will more likely choose to work with a product or service related to the subject: Technology, Craft lessons, Computer science, Art, Science

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Creativity, Kindness, Comprehension, Willingness to contact, Empathy, Communication skills, Negotiation skills, Patience, Ability to deal with conflicts, Sense of order, Ability to make decisions, Assertiveness, Independent working, Motivation

Required skills in order to practice the profession: Handicraft, Power of observation, Organisational talent, Math understanding, Concentration, Commercial skills, Logical thinking, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension

Interests: Communication with customers, negotiating, sales, distribution, logistics, traveling, working with social networks.

Trends:

Although the basis of the direct sales process has remained unchanged throughout the years as it is in its essence a direct contact between the direct sales representative and the customer, digitalization has replaced this direct contact in part by digital sales and distribution directly to the customers' homes.

The focus on digitization within the direct sales process has been shifting towards research and market analysis, determining the needs and wants of potential customers, as well as using digital communication tools (social media, platforms) to communicate directly with potential customers. Aside from the usual websites and platforms (for sales/distribution), companies are creating social media profiles for their products and services, with direct sales representatives managing accounts as "social media managers", assuming their role in a digital environment.

However, the fundamental methods (presentation, samples, brochures, catalogues) are essentially the same, merely digitized (in the form of video clips, interactive posts with downloadable content etc.).

In the digital environment, customer behavior is easily monitored and traced, reshaped into targeted ads and used to analyze and predict the needs and wants of customers as well as the overall purchasing and sales trends of the market. In this aspect, machine learning and artificial intelligence are playing a big part in offering a multitude of new ways to interact with customers through advanced analysis and predictive technology.

Digitisation issues (e.g. specifications on different technologies, know-how):

There are two types of issues that direct sales representatives face due to digitization - one is in the tangible and other in the digital realm. The direct sales process "in person", face to face, has been digitized mostly in relation to the tools the direct sales representative uses. Whether it is using a tablet or computer for a product/service presentation, e-mailing the potential customer documentation and brochures, using a computer for customer base creation and monitoring or simply planning an optimal travel route using the customer database and GPS software. The digital format however has completely reformatted the profession, with direct sales representatives using websites, social media profiles and/or online platforms to contact customers directly, using digital content to promote and present their products and services. This has raised the digital skillset requirements drastically, with the work process and environment fully digitized.

Further training opportunities/courses: Further possibilities rely completely on the individual direct sales representative, as there are many seminars and courses available in sales, psychology, social media managing and communication skills. Quite often, the companies employing the direct sales representatives will offer further training possibilities. Everyone is also free to complete a course of study, e.g. in business administration.

Alternative professions: Salesperson, sales manager, store clerk, cashier, market researcher.

Training abroad: For a direct sales representative, training abroad does not offer any additional value (aside from improving foreign language skills and improving cultural/social knowledge) as the profession focuses on the individual relationship with the customer. It does not require recognition or specific licensing in any of the EU member states.

Further information:

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<https://www.seldia.eu/>

Insurance sales agent

Short job description: An insurance agent (or representative, intermediary) is a person who, based on employment or other legal relationship with an insurance company or an insurance agency, is authorized to conclude insurance contracts in the name and for the account of the insurance company. In addition to the conclusion of contracts, insurance agency services also include activities related to the preparation for the conclusion of an insurance contract, and assistance with the exercise of the rights arising from the contract, especially with the solving of claims addressed to an insurance company. They also advise and support customers and take on controlling and accounting tasks. They prepare or renew insurance contracts, receive payment for insurance premiums and perform other tasks to concluding insurance policies. They offer insurance in various areas, roughly divided into non-life (property) and personal insurance. The first category includes insurance of property, liability, physical losses, crops and fruits, animals and assets. This set also includes deposit insurance, car insurance, transport, tourism and package insurance. The category of personal insurance includes life, health, accident, pension, annuity, scholarship and additional/supplemental insurance.

Typical operational areas: An insurance agent is an employee of an insurance company who, within the limits of their authority and in the name and on behalf of the insurance company, provides insurance agency services. However, they also work for insurance brokers and banks, as well as for software developers for the insurance industry, management consultancies and debt collection agencies.

Type of training: This is a regulated profession, requiring a license to practice in Slovenia, which is issued by the Insurance Supervision Agency upon meeting a specific set of criteria: proof of completion of at least secondary education; passing an examination of professional knowledge necessary for the performance of insurance agency or brokerage business; at least one year of experience in the field of insurance business; knowledge of the national language; no previous conviction of economic and property crimes, resulting in imprisonment longer than 3 months, and that the Insurance Supervision Agency did not revoke the candidate's license to conduct insurance agency or brokerage business less within the past five years. After acquiring the license, the licensed agent is entered into the national registry of insurance agents.

In Germany it is a recognized apprenticeship that is assigned to the Chamber of Industry and Commerce. In Germany, dual training takes place in the company and at the vocational school.

Duration of the apprenticeship/training: One of the criteria for acquiring an insurance agent license is at least one year of experience in the field of insurance business, usually in the form of an apprenticeship with an individual insurance agent, insurance broker or an insurance agency or company.

Certain insurance companies offer mentored apprenticeships, seminars and even "academies" – short immersive and intense courses.

In Germany 3 years.

Required previous education / school leaving certificate: Secondary education degree i.e. General Certificate of Secondary Education

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Economics, National language

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Willingness to contact, Empathy, Communication skills, Negotiation skills, Patience, Ability to deal with conflicts, Sense of order, Ability to make decisions, Assertiveness, Independent working, Motivation

Required skills in order to practice the profession: Organisational talent, Math understanding, Concentration, Capacity of reaction, Commercial skills, Logical thinking, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension

Interests: Negotiate with customers and acquisition, sales, communication skills, travel, social networking, psychology, insurance law, risk management.

Trends:

Aside from moving the insurance sales to digital platforms (almost exclusively websites) and shifting to a digital way of communicating and working for potential customers (from initial contact to filing claims and insurance process finalization), the most intense digitization process is occurring in the risk calculation and documentation filing parts of the insurance process.

While the former has little to do with the actual work of the insurance agent - risk assessment is done by insurance brokers or companies/agencies, with results forwarded to agents in the field – the latter is a large part of the insurance agents' work. With the insurance industry shifting to paperless, digital environments, all clients' information is stored, analyzed and instantly accessible. The documentation filing process – contracts, claims, renewals etc. – can therefore be automated, with minimal amount of manual supervision.

Digitisation issues (e.g. specifications on different technologies, know-how):

Working in the field, insurance agents use computers or tablets, with immediate access to their client database and entire catalogue of insurance options by their company. The entire process of concluding an insurance contract can be done either in person or completely digitally, with digital signatures (using digital/qualified certificates) and communicating with the clients/customers via e-mail or videoconference calls.

There are companies that are introducing apps and platforms on their websites, with the ability to complete the entire process, from contract to claim, within their digital environment (app/platform), with no agent "intermediary". At first sight, this format might seem like a threat, making insurance agents obsolete, with complete automated integration of the process. However, actual input from the insurance agents is still a necessity – determining which insurance is appropriate, consolidating risk assessment and risk mitigation in relation to policies, customer relationship management in the claims process etc. It is these processes that cannot be automated (without advanced AI) that agents will have to learn how to integrate gradually into a digital environment workflow.

Further training opportunities/courses: Insurance companies employing agents often offer further training possibilities, specializing in different types of insurance. In Germany, they have the option of becoming a specialist in insurance or studying insurance business administration.

Alternative professions: Insurance broker, insurance assessor, sales consultant, salesperson, financial advisor.

Training abroad: Due to the specifics of respective national legislatures concerning insurance sales (laws, registries), there are no opportunities for insurance agents to further their knowledge by training abroad. There are few 3-4 weeks courses offered in Denmark, Estonia, Ireland, Latvia, Poland, Austria, Spain, Hungary and the UK. And also the possibility of the additional qualification "European Assistant".

Further information:

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<https://spot.gov.si/sl/dejavnosti-in-poklici/poklici-in-strokovni-kadri/zavarovalni-zastopnik/#dovoljenje-za-opravljanje-poslov-zavarovalnega-zastopnika>

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Store manager/commercial manager/sales manager

Short job description: The store (sales, commercial) manager conducts operations in an individual trade unit or store. In a small trading company, the store managers take care of obtaining a license to conduct trade activities and hires salespeople. They determine the selection of goods, the quantity and value of inventories of goods and the types of offered services. They organize the work so that when the store is open, sales run smoothly, examine the supply market and the wishes of consumers and they obtains offers for the purchase of goods and select the most favorable supplier. They are familiar with price of goods, payment terms, transport possibilities and different types of contracts e.g. with contract of sale, commissions contract, agency agreement, transport contract and contract for the sale of goods in installments.

They are responsible for collecting goods as it is obligatory to check whether the appropriate goods have arrived by type, quantity and quality, at the agreed price at the agreed time and at the agreed place. They know how to handle the documentation and documents accompanying the goods, such as the delivery note, the declaration, the guarantee certificate, the technical instruction and the customs documents and know how to treat deficits and lacks. They often run or monitors the store's financial operations, taking care of property insurance, fire safety, safety at work and the implementation of hygienic, technical and sanitary regulations. And they must also protect the goods from theft, participate in the organization and implementation of inventories and is materially responsible for the performance of the managed business unit.

Typical operational areas: A store manager can be employed in wholesale, retail or trade services, managing a store, a department store, a larger department, a large number of smaller departments, a discount store, or a wholesale warehouse. A store/sales manager can also run a commercial business by professionally arranging business and work processes of purchasing, storing, preparing and selling goods in various forms of out-of-store sales, such as mail order, door-to-door sales, mobile stores or mobile stands.

Type of training: Although there is no prescribed education for the profession, an education in commerce/trade is desirable. Acquisition of secondary professional education in Commercial Management is in Slovenia possible at the Chamber of Commerce and Industry of Slovenia, where applicants can take the Management Exam (store manager exam, managerial test), earning the title “Commercial Manager” (in other EU countries, further training is also based on commercial training that has already been completed and both at the responsible chamber and at independent educational institutions). The application conditions are: completed IV. level of education and 3 years’ work experience in the field of trade. The examination relates to various subjects: Trade legislation, business with marketing, use of electronic commerce, business and economy, pedagogical and andragogical subjects, business communication, sales psychology, knowledge of goods, accounting with business finance basics.

Duration of the apprenticeship/training: One of the main prerequisites for taking the Managerial Exam is 3 years’ experience in the field of commerce. This usually means working as a salesperson or cashier.

Required previous education / school leaving certificate: None is required, but at least a secondary education in commerce/trade is desirable.

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Economics, National language, English

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Creativity, Comprehension, Willingness to contact, Empathy, Communication skills, Negotiation skills, Patience, Ability to deal with conflicts, Sense of order, Ability to make decisions, Assertiveness, Independent working, Motivation

Required skills in order to practice the profession: Spatial Thinking, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Orientation sense, Commercial skills, Logical thinking, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension

Interests: Distribution, logistics, market analysis, management, communication, negotiation, psychology of sales, e-commerce, finance.

Trends:

Viewing the store manager profession work processes as a mixture of logistics, distribution, sales, finances and management, all these areas have experienced intense digitization. Physical stores are gradually being replaced by e-commerce websites/platforms, reducing actual physical stores to warehouse/inventory.

In light of this, store managers are transforming into e-commerce store managers, with the workflow shifting into a digital environment – communication, sales, advertising, logistics, everything is input, monitored and analyzed digitally. The rising trend is creating a digital ecosystem (ie. Amazon, AliExpress, large store chain brands et al), with an all-in-one or a cross-platform approach to customer needs and wishes; within this ecosystem, the store manager becomes a salesperson, cashier and website manager in one.

A tendency to shift from website to apps is also present in the marketplace, further facilitating the sales process on-the-go / on-the-fly (using a phone or tablet). The main trend focus is “customer experience”.

Digitisation issues (e.g. specifications on different technologies, know-how):

Store managers are facing multiple digitization challenges in forms of adopting online store platforms (e-commerce), using social media selling platforms (FB/IG stores). Working in the digital environment has raised the digital skillset requirements, with the entire process – visiting the store, browsing goods, payment, confirming delivery – is contained within the platform itself. Concerning work processes in actual physical stores, the digitization process is minimal and gradual, using computers to process payments, monitor inventory, communicate with distributors.

Further training opportunities/courses: Further possibilities rely on the individual store manager, as there are seminars and courses available in sales, psychology, social media managing, Website development and communication skills.

Alternative professions: Salesperson, direct sales representative, sales manager, store clerk, cashier, market researcher.

Training abroad: For a store manager, training abroad does not offer any additional value to the profession (aside from improving foreign language skills and improving cultural/social knowledge).

Further information:

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Cashier

Short job description: The cashier works in a store and accepts money from the customer that corresponds to the value of the purchased products. The cashier usually carry out the buying and selling processes between the buyer and the store, issues an invoice for a pre-known price of the product and accepts payment from the customer (cash or card/credit/non-cash forms of payment), takes care of cleanliness and order at the cash desk, cooperates with salespeople and managers and helps resolve misunderstandings regarding prices and product quality and finally, at the end of the working hours (workday, shift), cashiers close their operations (register, POS terminal) and remove the cash drawer from the cash register and hand it over to the supervisor or balance the register (counts the money) themselves.

Typical operational areas: Cashiers usually work in stores of various sizes, from smaller private stores to supermarkets and malls, and are in demand wherever cash-for-sale products or services are offered for sale - cash or non-cash.

Type of training: Usually deemed as a profession with no required qualifications, training for a cashier is focused on main work assignments - using the cash register, executing different forms of payment, counting cash coming in and going out and resolving customer issues (pricing, inventory, returns), although the latter is often forwarded from the cashier to the in-store salesperson. Training is aimed at acquiring skills and competencies using work accessories - using the cash register and computer system for basic operation, using the POS terminal for credit or bank card operations, operating the conveyor belt, using the price scanner and tools (pliers or demagnetizer) for removing mechanical protection of products against theft.

The cashier has to be well acquainted with the computer system used in cash management and the credit card system. Speed and agility when entering prices and other commands on the cash register keyboard are required. It is also necessary for the cashier to comply with the safety regulations for working with the cash register and the security cassette with money. The selection and use of various procedures for accepting money is determined by the regulations and rules of monetary operations of the store.

Larger stores and store chains offer seminars and courses for cashiers, however most stores consider on-the-job training to be appropriate for the cashier profession (either standalone or with a mentor/supervisor).

Duration of the apprenticeship/training: Although there is no prescribed education for the profession, an education in commerce/trade is desirable. There are secondary (3-year) school programs available (IV. level of education), with the individual attaining a General Certificate of Secondary Education and acquiring the official professional title of 'trader/salesperson' upon completion. For individuals with no previous education in the field, larger stores and store chain offer seminars and courses, usually lasting no longer than a month. Most stores consider on-the-job training to be appropriate for the cashier profession, with a trial period of up to 6 months.

Required previous education / school leaving certificate: No previous education required, a secondary education degree ie. General Certificate of Secondary Education is desirable.

Required school subjects, in which subjects potential trainees should perform well:

Mathematics, Economics, National language, Computer science

Required social competencies in order to practice the profession: Care, Prudence, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Kindness, Comprehension, Willingness to contact, Empathy, Communication skills, Negotiation skills, Patience, Ability to deal with conflicts, Sense of order, Assertiveness, Independent working, Motivation

Required skills in order to practice the profession: Eye-hand-coordination, Technical understanding, Power of observation, Math understanding, Concentration, Commercial skills, Dexterity, Text comprehension, Linguistic comprehension

Interests: Communication, negotiation, sales psychology.

Trends:

The digitisation trends in the cashier profession relate to payment methods. In the recent decades, cashless payment methods (credit cards, digital apps – PayPal, banking apps, Venmo etc.) have become fully integrated and the trend is pushing even further, with quite a few stores beginning to accept cryptocurrency.

Digitisation issues (e.g. specifications on different technologies, know-how):

Relating to the cashiers' work processes and work tools, digitization has updated the cash register to a computer (using a computer program/app); payment methods have expanded to include POS terminals (requiring an internet connection and program/app integration). The recent transition toward cashless methods has prompted the use of Smartphones and/or advanced wireless terminals (to accept app payments, NFCs and QR scans) or even pre-payments before visiting the store (PayPal, online payments), with the customer coming to the store for a pickup and the cashier handing over the consumer goods and confirming the sale/exchange. This requires the store using an online platform (website or app), with the customer ordering and paying online beforehand.

Further training opportunities/courses:

After attaining a General Certificate of Secondary Education and acquiring the official professional title of 'trader/salesperson' upon completion, the individual can enroll in a two-year program 'Commercial technician' (V. level of education), with more options opening up in finance, banking, commerce and marketing.

Alternative professions: Store manager, direct sales representative, bank teller.

Training abroad: There are no options for cashiers to train abroad. Training abroad would also bring no additional value to the profession.

Further information:

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Market researcher

Short job description: The work of market researchers is extremely creative and often short-term due to the variety of tasks they perform in the profession. It is the job of the market researcher to spend the money of the client or advertiser in such a way that a certain goal, such as increasing sales and improving the company's reputation, is effectively achieved. This requires data collection, researching consumer opinions, planning messaging strategies, and selecting the best creative solutions. It is important to choose the right medium in which the message is published, and afterwards research and analyze the success of the marketing campaign. The market researcher cooperates with the client of the marketing services (usually the management of the company) and during the marketing campaign cooperates with other professions in advertising agencies, co-creating the final message (of the campaign).

Typical operational areas: The market researcher works in the field of advertising as well as public relations, sales promotion, personal sales, organization of fairs and exhibitions, internet communications, corporate identity, sponsorship and donations. A market researcher can work independently or is employed in a market research agency, in a larger company in the marketing department, or in an advertising agency. Market researchers can also work as researchers at a university or in journalism.

Type of training: A market researcher must have specialized knowledge of sociology, economics, psychology, anthropology, rhetoric, management (leadership) and other social sciences. Above all, market researchers must understand the communication processes they learn during their studies and later in practice. A market researcher has to have an active knowledge of foreign languages, especially English; and at least a general knowledge of specialized computer programs for statistical processing, presentation and editing of texts. The training, offered by advertising/marketing agencies, usually e.g. in Slovenia comes in two formats:

1. A trial employment period (paid apprenticeship) with a learn-on-the-job process, either standalone or with a mentor/supervisor.
2. A course/seminar, with the applicant attending non-paid in-depth presentations of the company (activities, work processes, vision and products/services) and passing a test or examination to qualify for the job position; this can often lead either into regular employment or into the aforementioned trial period.

Duration of the apprenticeship/training: The apprenticeship period depends on the company executing the apprenticeship and their demands. Seminars and courses can take weeks or months; a trial employment period can take up to 6 months. Students at the Faculty of Social Sciences can apply for apprenticeships (in form of student work) to work at advertising agencies, but are usually delegated with menial tasks, unrelated to the market researcher profession.

Required previous education / school leaving certificate: The most specialized knowledge in this profession is available at the Faculty of Social Sciences, majoring in marketing communication. Education in either Economics and/or Psychology is also a common requirement for the profession of market researcher. Overall, a high school diploma is required for this profession..

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Economics, Computer science, National language, English

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Creativity, Kindness, Comprehension, Willingness to contact, Empathy, Communication skills, Negotiation skills, Patience, Ability to deal with conflicts, Sense of order, Ability to make decisions, Assertiveness, Independent working, Motivation

Required skills in order to practice the profession: Spatial Thinking, Drawing skills, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Commercial skills, Logical thinking, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension

Interests: Sociology, psychology, data analysis, statistics, advertising, design, copywriting, negotiation, mediation, e-commerce and digital marketing, finance, communication.

Trends:

The major shift created by digitization in the market researcher profession is the ever increasing focus on online consumer behavior, with online websites and platforms (social media, forums) monitoring and tracking consumers (with texts, posts, cookies, polls, likes and clicks), mining for data. It is this behavior that market researchers/analysts are addressing with advertisement, reshaping and automating the data analysis processes into algorithms for targeted advertising and predicting future consumption with predictive analytics.

Digitisation issues (e.g. specifications on different technologies, know-how):

As market research relies on customer behavior/response and the fact this can be more specifically and effectively monitored/tracked online, the requirements for digital market research – using data mining, data analysis and predictive analytics – have increased drastically. In lieu of this, computer skill requirements are rising, with advanced programming abilities (using scripts, bots, data analysis software, search engine optimization, creating modules/algorithms etc.) becoming an indispensable skill of market researchers. Market researchers either adopt this skillset or work with experts for these processes, but nonetheless knowledge about these forms of digital market research is essential. When preparing a campaign, market research *have to be able to use advanced digital communication and computer skills by using (photo, video, print) design programs, video and web conferencing, screen sharing, website design, presentation software, coding software.*

Further training opportunities/courses: Further training opportunities for market researchers are almost countless, with options for courses/seminars in digital marketing, design, psychology, communication, data analysis, social media management etc.

Alternative professions: Salesperson, direct sales representative, market analyst, ad copywriter, designer.

Training abroad: Students at the Faculty of Social Sciences, majoring in marketing communication, have many options to study abroad for a semester or two, gathering experience from different universities and faculties abroad. For professional market researchers, working on projects with advertising agencies and clients abroad is always beneficial, especially if they relate to bigger or more diverse markets.

Further information:

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Salesperson

Short job description: The work of a salesperson is very diverse and includes many areas of work. We distinguish between the sale of goods (and/or services) in retail, large trading systems, specialty stores, and in small trading companies. The seller must ensure that the sale of goods is in accordance with applicable law and good business practice. When the salesperson receives the goods, they must unload the goods, check the quantity and quality (check for harmful ingredients and expiration dates), fill out the necessary documentation (transit, inventory), repack them if necessary, prepare them for sale - marking them with the price and arranging them properly on the shelves. The salesperson accounts for the goods sold, takes care of the cash register and keeps records of all orders, sales and deliveries. They must also deal with complaints and take care of all the necessary documents for returns or exchanges.

Typical operational areas: Salesperson can be employed in a variety of areas - working in and outside the store, in a kiosk, a retail or specialized store, at a self-service store, a department store, a discount store, a department store and in a shopping center. Salespersons can sell cars, cosmetics, electronics, photographic materials, musical instruments, building materials, books, jewelry, furniture, hardware, textiles, footwear, food etc.

Type of training: Training for a salesperson is usually tailored to the specific needs of the workplace (store, kiosk, shopping center etc.). It is focused on 1. The use of work accessories: elevators, refrigeration equipment, goods cutting machines, typewriters and calculators, wrapping paper, bags, strings and adhesive tapes, computers, goods measuring and packaging tools, sales counters, stands, ladders and various means of transport and 2. The executing work processes: writing/typing/printing bills, communicating with customers, warranties and returns, delivery documentation and invoices. In Germany it is a recognized apprenticeship that is assigned to the Chamber of Industry and Commerce. In Germany, dual training takes place in the company and at the vocational school

Duration of the apprenticeship/training: There are secondary (3-year) school programs available (IV. level of education), with the individual attaining a General Certificate of Secondary Education and acquiring the official professional title of 'trader/salesperson' upon completion. Larger stores and store chain offer seminars and courses, usually lasting no longer than a month. Most stores consider on-the-job training to be appropriate for the salesperson profession, with a trial period of up to 6 months.
In Germany 2 years.

Required previous education / school leaving certificate: In Slovenia a 3-year secondary (IV. level) education program, General Certificate of Secondary Education upon completion and title of 'trader/salesperson'. In Germany, at least a secondary school leaving certificate is required for training as a salesperson.

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Economics, Computer Science, National language

Required social competencies in order to practice the profession: Care, Prudence, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Kindness, Comprehension, Willingness to contact, Empathy, Communication skills, Negotiation skills, Patience, Ability to deal with conflicts, Sense of order, Ability to make decisions, Assertiveness, Independent working, Motivation

Required skills in order to practice the profession: Spatial Thinking, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Orientation sense, Commercial skills, Logical thinking, Linguistic thinking, Retentivity, Text comprehension, Linguistic comprehension

Interests: Communication, negotiation, sales psychology, distribution, marketing, finance.

Trends:

Digitisation has replaced the direct contact between the salespersons and customers in part with digital sales and distribution directly to the customers' homes. The focus on digitization within the sales process has been shifting towards research and market analysis, determining the needs and wants of potential customers, as well as using digital communication tools (social media, platforms) to communicate directly with potential customers.

Aside from the usual websites and platforms (for sales/distribution), companies are creating social media profiles for their products and services, with salespersons managing accounts as "social media managers", assuming their role in a digital environment.

However, the fundamental methods of offering goods in exchange for money are essentially the same, merely digitized – with the customer browsing the inventory/offers digitally and using cashless payment methods (PayPal and even cryptocurrency in some cases).

Digitisation issues (e.g. specifications on different technologies, know-how):

The sales process in-store has remained largely unaffected by digitisation, with the salesperson merely updating the work accessories (using tablets, phones, computers) and so more flexibility is available to negotiate with and inform the customer (using e-mail, digital contents, brochures with specification, video presentations etc.). The digital sales format (e-commerce) however has completely reformatted the profession, with salespersons using websites, social media profiles and/or online platforms to contact customers directly, using digital content to promote and present their products and services. This has raised the requirements on digital skills for salespeople drastically, because the work process and environment are fully digitised.

Further training opportunities/courses: After attaining a General Certificate of Secondary Education and acquiring the official professional title of 'trader/salesperson' upon completion, the individual can enroll in a two-year program 'Commercial technician' (V. level of education), with more options opening up in finance, banking, commerce and marketing. Acquisition of secondary professional education in Commercial Management is possible at the Chamber of Commerce and Industry of Slovenia, where applicants can take the Management Exam (store manager exam, managerial test), earning the title "Commercial Manager".

In Germany, there is the possibility of training as a retail clerk or commercial specialist or later studying to become a commercial business economist.

Alternative professions: Store manager, direct sales representative, sales manager, store clerk, cashier, market researcher.

Training abroad: For a salesperson, training abroad does not offer any additional value to the profession (aside from improving foreign language skills and improving cultural/social knowledge).

Further information:

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Telemarketer (telephone sales representative)

Short job description: A telemarketer is a phone-based sales representative, working in employer call centres or for third-party call centre firms. Using leads generated through a company's marketing department, the telemarketer's primary role is to sell goods or services to customers ('prospects'). A telemarketer starts the workday by gathering information about the product, the conditions of sale and information about potential buyers. This is done via computer, with access to call databases (the computer can also automatize the call dialing process). The "script" for the call is either prepared by the company or by the telemarketers themselves. This script outlines the basic course of the conversation, what the presentation will be like, how the telemarketer gauges the readiness for the conversation (the sales interview) and show the benefits of the offer.

Telemarketers typically never meet their customers face-to-face, therefore an excellent telephone demeanour is imperative, as is mastering the art of convincing a customer to invest in what you are selling. After the conversation, the telemarketer prepares the documentation for the administrative completion of the sale and submits it to the relevant services, forwarding any remarks, suggestions and possible complaints (which are especially important in cases of unsuccessful sales). Training is important for the telemarketer to execute the script smoothly, reach as many customers as possible in a single workday and finalize sales. Telephone communication is more demanding than face-to-face communication. There is no visible customer behavior, emotional/facial expressions and other factors that usually prompt the salesperson's response.

Typical operational areas: A telemarketer can work in a company's call center, or he can work in a home environment. The content of its offer are various products, e.g. food, cosmetics, books, stationery, building materials or furniture, craft or intellectual services, seminars, lectures and insurance.

Type of training: Training for a telemarketer is not extensive, but is very specialized, with emphasis on the sales interview/conversation. The telemarketer is constantly immersed in the role of the buyer (their wishes, needs and interests). The training takes place as an internal seminars, the telemarketers are acquainted with the sales program, the keys to psychological sales, psychological preparation for sales and motivational techniques. They are trained in telephone interview preparation, voice improvement exercises, questioning and effective presentation techniques, and how to deal with objections. They learn about the technique of maneuvering and ending a sales conversation.

Duration of the apprenticeship/training: In Slovenia telemarketing companies usually organize internal seminars, lasting no longer than a month, often offering on-the-job training with a trial period of up to 6 months. For the individual wanting to attain an official professional title of 'trader/salesperson', there are secondary (3-year) school programs available (IV. level of education), with the individual attaining a General Certificate of Secondary Education upon completion. In Germany, there are also courses, which can vary in the duration from company or provider to provider.

Required previous education / school leaving certificate: Different educational backgrounds are advantageous for training as a telemarketer, such as training as a salesperson, industrial engineer or almost all further training courses in the commercial field. A specific school-leaving certificate is not required.

Required school subjects, in which subjects potential trainees should perform well:
Computer science, Economics, National language

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Kindness, Comprehension, Willingness to contact, Empathy, Communication skills, Negotiation skills, Patience, Ability to deal with conflicts, Sense of order, Ability to make decisions, Assertiveness, Independent working, Motivation

Required skills in order to practice the profession: Power of observation, Organisational talent, Concentration, Capacity of reaction, Commercial skills, Logical thinking, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension

Interests: Communication, sales psychology, negotiation, social networking, market analysis.

Trends:

The most important trend with telemarketing is focused on market analysis and research, the results of which are providing the call lists (prospect list) for the telemarketer and also influence the interview process – evaluating the effectiveness of the individual questions and responses of the telemarketer. To achieve this, companies are implementing AI solutions - AI offers multiple predictive responses, which can be used by agents to better assist their customers. This technology also allows full omnichannel support, since AI can collect and analyze data about a customer from various touchpoints, all at once.

Other forms of AI such as chatbots and Intelligent Virtual Agent (IVA) are transforming how businesses approach telemarketing. IVAs provide an incredibly realistic customer experience by utilizing machine learning, natural language processing, and advanced search recognition. Such technology draws experience from a decade of data and insight into customer conversations.

Digitisation issues (e.g. specifications on different technologies, know-how):

The telemarketers' telephone use has been updated with computer solutions, using automated calling using call lists, recording the conversation or tracking the conversation with speech-to-text software, and offering immediate information regarding the service/product. The telemarketer can use a computer, tablet or phone to make calls, follow the script and conclude the sale, preparing all the necessary documentation (orders, complaints, notes).

Further training opportunities/courses: After attaining a General Certificate of Secondary Education and acquiring the official professional title of 'trader/salesperson' upon completion, the individual can enroll in a two-year program 'Commercial technician' (V. level of education), with more options opening up in finance, banking, commerce and marketing. Furthermore there are not only in Slovenia many further possibilities also for seminars and courses available in sales, psychology, and communication skills. Quite often, the companies employing the telemarketers will offer further training possibilities.

Alternative professions: Salesperson, store manager, direct sales representative, sales manager, store clerk, cashier.

Training abroad: For a telemarketer, training abroad does not offer any additional value (aside from improving foreign language skills and improving cultural/social knowledge) as the profession focuses on the individual conversation/interview with the customer.

Further information:

https://www.ess.gov.si/ncips/cips/opisi_poklicev/opis_poklica?Kljuc=1559&Filter=

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<https://techsee.me/blog/digitize-call-center-tomorrow/>

<https://www.regalix.com/insights/telemarketing-trends/>

<https://qualitycontactsolutions.com/company-news/psychology-perfect-outbound-telemarketing-script/>

<https://qualitycontactsolutions.com/company-news/psychology-perfect-outbound-telemarketing-script/>

<https://www.callboxinc.com/telemarketing/the-psychology-of-outbound-telemarketing-assessing-prospects-personalities/>

<https://www.contactspace.com/blog/call-scripting-psychology-hacks>

<http://www.telesalestraining.net/The-Psychology-of-Selling-Telesales-1.html>

Appraiser (auctioneer)

Short job description: An appraiser's job is comprised of: organizing, advertising and conducting auctions; providing suitable premises for the auction, arrange insurance and ensure the transport and safety of auctioned goods/items; reviewing and evaluating things (goods, objects, items) and compiling inventories and catalogues and knowing and abiding by the laws and rules that apply to appraisals and auctioning. Some appraisers are experts in one type of objects (i.e. jewelry, precious stones, books, carpets, antiques, paintings, glass or porcelain).

Typical operational areas: Appraisers cover all kinds of products and objects that have exchange value and can be appraised and traded on the market. Methods of work are not prescribed, however there are unified standards of conduct and operation. Establishing a market value is essentially purely economic, with no legal limitations or requirements.

Type of training: Training for appraisers is available at specialized auction houses, galleries, museums and antiquity stores. Training is individually unique and concerns items/goods that are available to that auction house or that gallery/museum/antiquity store in that specific time. An appraiser must be communicative, unobtrusive and a trustworthy person and most of all, has to have expert knowledge about the specific items/goods.

Duration of the apprenticeship/training: Duration of training depends upon the auction house and the individual as well as the type of goods/item that the individual intends to work with, for example – appraising paintings requires knowledge of art history, conservation and the art market.

Required previous education / school leaving certificate: In this profession, the ability to sell takes precedence over formal education, although in practice appraisers with higher or university education have greater opportunities (with degrees in art history, art conservation and restoration, museology, history, geography, geology, design etc.).

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Crafts lessons, Technical handicraft lessons, Economics, Art, National language

Required social competencies in order to practice the profession: Care, Prudence, Willingness to learn, Sense of responsibility, Comprehension, Willingness to contact, Empathy, Communication skills, Negotiation skills, Patience, Ability to deal with conflicts, Sense of order, Mastery, Ability to make decisions, Assertiveness, Independent working

Required skills in order to practice the profession: Spatial Thinking, Craft skills, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Orientation sense, Commercial skills, Logical thinking, Linguistic thinking, Retentivity, , Text comprehension, Linguistic comprehension

Interests: Property value trends, art market, various market trends, sales/trading/commercial legislature, communication, negotiation, contract law, history,

Trends:

In the recent years, auctions have been digitally updated, with hammers and bells being replaced by computers, tablets and phones, auction guests connecting with the auction on an online website, platform or via video calls and web conferences. Many online reselling platforms (eBay, Etsy, Bonanza etc.) offer their users to auction off items and partake in auctions by other users.

Digitisation issues (e.g. specifications on different technologies, know-how):

The auction process has slowly evolved to include virtual bids (via computer, tablet, phone) and appraisers require more and more digital skills. These are crucial in the appraisal of items as the internet has become a vast library of information (as well as misinformation) and thus the demand (and liability) for proper appraisal of items has increased. The online auction platforms and websites have enabled appraisers to engage with potential clients around the globe – using digital communication channels, dedicated auctioning software or websites and keeping records of clients and purchases.

Further training opportunities/courses: Further possibilities rely on the individual appraiser, as there are seminars and courses available for each and every type of specialized goods that the appraiser wants to work with.

Alternative professions: Real-estate appraiser, direct sales representative, market researcher, art dealer, salesperson, museum/gallery curator.

Training abroad: Appraisers can greatly benefit from working with auction houses and/or galleries, museums, antiquity stores in different countries. Training opportunities depend upon the individual's initiative and ingenuity.

Further information:

https://www.ess.gov.si/ncips/cips/opisi_poklicev/opis_poklica?Kljuc=1152&Filter=

<https://harrisonappraisals.com/appraiser-or-auctioneer-who-should-prepare-your-appraisal/#:-:text=In%20other%20words%2C%20an%20appraiser,and%20cannot%20work%20that%20way>

<https://antiques.lovetoknow.com/about-antiques/how-become-antique-appraiser>

<https://www.thebalancecareers.com/become-an-art-appraiser-1295634>

<https://www.isa-appraisers.org/becoming-an-appraiser>

<https://www.maine.gov/pfr/professionallicensing/professions/board-real-estate-appraisers/licensing/trainee-real-property-appraiser-temporary-licensee>

<https://www.theclassroom.com/education-antique-appraiser-3724.html>

<https://www.liveauctioneers.com/>

Financial analyst (investment analyst)

Short job description: The work of a financial analyst is focused either on the stock market, where stock trading takes place, or on the credit market. No matter where a financial analyst works, their key task is to prepare detailed financial analyses. The main task of a stock exchange financial analyst is to continuously monitor the value of shares on stock markets. Based on this, the financial analyst tries to determine which shares will gain value in the long run and/or which shares are worth buying. In order to advise the client as best as possible, the analyst reviews the company's past operations, reviews the annual reports and compares the share price with the situation in the company. A financial credit analyst checks to see if a company is able to repay its debts (for example, if this company requests a bank loan).

Typical operational areas: Financial analysts are usually work at banks (in the credit department), at the stock exchange or in companies that manage investment funds.

Type of training: Financial analysts spends most of their time behind a computer screen and monitor developments in the stock market. Money markets are constantly changing. The stock is traded from 1 a.m. to 8 p.m. in Japan, from 9 a.m. to about 5 p.m. in Europe and from 4:30 p.m. to 10 p.m. in the U.S., and if the analyst wants to be up to date all the time, they could work virtually all day. Training is focused on effective time management and specialization – focusing work on effectively managing the most profitable market segments. This profession requires precision, responsibility and care, as it is essentially working with someone else's money at their disposal. In order to be able to give appropriate projections for future events, the analyst must be knowledgeable, innovative, capable of analytical thinking and have the ability to anticipate trends. Although the work is mainly individual, the ability to work in groups and take into account the opinions of others is also desirable, as this reduces the possibility of misjudgment.

Duration of the apprenticeship/training: Companies usually offer internal apprenticeships, with the apprenticeship period depending on the company executing the apprenticeship and their demands (can even take 1-2 years). A trial employment period can take up to 6 months.

Required previous education / school leaving certificate: A university graduate degree in Economics, specializing in banking and finance.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Computer science, Economics, National language, English

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Willingness to contact, Empathy, Negotiation skills, Patience, Ability to deal with conflicts, Sense of order, Mastery, Ability to make decisions, Assertiveness, Independent working, Motivation

Required skills in order to practice the profession: Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Commercial skills, Logical thinking, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension

Interests: Stock market, credit market, mathematics, statistics, programming and coding, economics and business, finance.

Trends:

As the financial analyst profession has constantly relied on advancing technology and computers, the trend is moving towards more effective and faster analysis using machine learning, AI, predictive technology. Financial analysts are becoming more and more akin to computer programmers and coders, working with increasingly advanced data science. As this profession involves major financial risks, data science is becoming important in risk mitigation as well.

Digitisation issues (e.g. specifications on different technologies, know-how):

This profession has always been at the forefront of the digital evolution, with the first in the commercial sector to develop algorithms to predict trends and calculate fluctuations. This means that the marketing analyst should always be prepared to learn about new and upcoming methods of computer-aided analysis. The digital skillset bar is set very high and the success of an analyst can often rely on the ability to use the digital tool (computers, calculating/predicting software) in an agile timely manner. Analysts have to have insight into advanced computer software and code, monitoring stock and credit market metrics, company values, intricate trend and fluctuation calculations and are able to analyze graphs and statistical values, all within a digital environment.

Further training opportunities/courses: Further training opportunities for a financial analyst are courses/seminars in advanced statistics, coding and programming, risk management/mitigation, almost any advanced economics, computer science and mathematics course can be beneficial to the profession.

Alternative professions: Stock broker, insurance broker, insurance assessor, sales consultant, financial advisor, investment advisor.

Training abroad: Considering that the financial analyst works with a global market, training abroad would benefit depending on the educational and employment opportunities the foreign market presents (working for a large multinational company, a larger stock exchange etc.).

Further information:

https://www.ess.gov.si/ncips/cips/opisi_poklicev/opis_poklica?Kljuc=657&Filter=

<https://centreforapprenticeships.co.uk/vacancy/1827617/>

<https://bvfg.si/kariera/financni-analitik-zacetnik-2/>

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<https://www.udemy.com/course/ml-and-python-in-finance-real-cases-and-practical-solutions/>

<https://towardsdatascience.com/machine-learning-in-finance-why-what-how-d524a2357b56>

<https://becominghuman.ai/data-scientist-is-better-than-financial-analyst-data-analyst-and-research-analyst-ac5a1f3b20cb?gi=da12c3b7c753>

<https://www.replacedbyrobot.info/4341/financial-analyst>

<https://web-marketing.stern.nyu.edu/global-programs/risk-management/>

Bank teller

Short job description: Bank tellers provide financial and business services in the field of banking to clients of an individual bank, with services ranging from simple transactions (e.g. credit, cash and chequing transactions within the bank) to addressing more complex customer requests and demands (e.g. money orders, debt interest rates). A more experienced teller will perform more demanding tasks (pertaining to supervision and management) as well as managing the main cash register.

Typical operational areas: A bank teller work in various areas of banking as well as in any kind of credit institution. There they are active from the area of simple transactions in the initial phase through later work with customers to operating the main checkout. They are also active on stock exchanges.

Type of training: In Germany, it is dual training that takes place both in the company and at the vocational school. In Slovenia this profession comes with an initial prerequisite of a secondary professional education in commerce/trade or a high-school diploma, with additional banking training, most often available within individual banks in the form of on-the-job training (work-as-you-learn) and is considered a trial period for a more permanent employment position.

Duration of the apprenticeship/training: In the Germany the training duration is 3 years. In Slovenia, commercial training or a high school diploma is a prerequisite.

Required previous education / school leaving certificate: At least a secondary education in commerce/trade is required.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Computer science, Economics, National language, English

Required social competencies in order to practice the profession: Care, Prudence, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Kindness, Comprehension, Willingness to contact, Empathy, Communication skills, Negotiation skills, Patience, Ability to deal with conflicts, Sense of order, Ability to make decisions, Assertiveness, Independent working, Motivation

Required skills in order to practice the profession: Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Commercial skills, Logical thinking, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension

Interests: Economics and business, finance, communication, negotiation, sales psychology, security.

Trends: The banking industry has always been pushing the boundaries when it comes to digitization, especially in regards to security (encryption), data analysis and data transfer technology (data logistics). These trends influence the profession of bank teller very quickly and drastically, requiring all bank personnel to use up-to-date systems and technology, constantly adapting to potential threats – using updated software, data safety (encryption) protocols, closed internal transactional and messaging systems. Swift and near-immediate responses are required in cases of credit card theft, fraud attempts, account hacking etc. The biggest threat to the profession of bank teller has been the development and ever-constant spread of e-banking, enabling clients to tend to most of their banking demands and needs via platforms and apps. However, the bank teller profession remains the constant element of security and personal approach that cannot be replaced nor substituted.

Digitisation issues (e.g. specifications on different technologies, know-how):

Bank tellers have to be adept at using a computer (for the internal banking software/system), a mobile phone (for the communication as well as banking apps). Computer use is focused mostly on utilizing the internal banking software for account management – for transactions, monitoring and often messaging as well (with messages receiving the same amount of security and encryption as the transactions themselves).

The mobile app, although mostly automated, still relays certain requests for processing through the app to the actual bank tellers managing the account (transaction limits, approvals, key account changes etc.).

Further training opportunities/courses: A bank teller will advance their workplace position during their employment, usually working their way up from simple transactions to more demanding operations; training for advancement opportunities (promotions to department heads, bank managers) usually present themselves later on, usually requiring 3 years of work experience in the field of banking.

Alternative professions: Insurance clerk, direct sales representative, cashier, real estate clerk and any commercial training profession

Training abroad: For a bank manager, training abroad does not offer any additional value to the profession (aside from improving foreign language skills and improving cultural/social knowledge) as banking systems are not only vastly different from one bank to another but from one country to another as well.

Further information:

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https://en.wikipedia.org/wiki/Bank_teller

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<https://www.bankinghub.eu/banking/human-capital-change/bank-clerk-crisis-the-financial-sectors-fight-for-talents>

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<https://www.nlb.si/klikin>

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<https://www.deloglasnik.si/Zaposlitev/301022/Vodja-poslovalnice-mz/Expired>

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<https://siol.net/posel-danes/osebne-finance/ko-gre-za-posojilo-smo-arhitekti-vase-financne-prihodnosti-563314>

<https://www.dbs.si/o-nas/zaposlitve/bancni-svetovalec-m-z-v-pe-primorska-poslovalnica-koper-2022-05-31>

Gas station attendant

Short job description: A gas station attendant works at a gas station, in many ways a similar profession as a cashier and a salesperson, selling fuel and other products like car equipment and goods, foods and beverages, printed media, flowers etc. Gas station attendants work mostly self-service stations (the customers pump the gas themselves), but at non-self-service stations they will fill the tank for the customer (replacing the previous profession of a gas station attendant). The most important aspect of the gas station attendant profession is safety – gas is highly flammable and as such has to be handled following strict safety guidelines. Gas stations attendants have to accept and oversee fuel delivery to the station and are ultimately responsible for the cash register.

Typical operational areas: Gas station attendants are employed exclusively at gas stations, which come in different sizes (larger stations combining gas stations with markets or restaurants/delicatessen). The most common stations are self-service, where the attendant will perform most of the duties of a cashier or salesperson. Quite often the gas station attendant will assist the customer with the vehicle and its maintenance (filling gas, changing and filling oil, wiper and cooling fluid refill, checking and maintaining tire pressure, changing light bulbs/wipers etc.).

Type of training: In Germany, the dual training is 3 years and takes place in the company and at the vocational school. In Slovenia the training for a gas station attendant is often provided by the hiring gas companies, offering on-the-job training programs. Training is focused on: using work accessories: cash register, computer, card terminal, gas pumps, air and water pumps, telephone; executing work processes: writing/typing/printing bills, communicating with customers, warranties and returns, delivery documentation and invoices, pumping gas/air, arranging store goods, helping with minor repairs and maintenance work on vehicles and fire and hazardous material training.

Duration of the apprenticeship/training: In Germany 3 years. In Slovenia the most gas companies consider on-the-job training to be appropriate for the gas station attendant profession, with a trial period of up to 6 months.

Required previous education / school leaving certificate: In Germany, a secondary school leaving certificate is required. In Slovenia is no previous education required, but a secondary education degree i.e. General Certificate of Secondary Education (preferably in the field of Commerce/Economics) is desirable.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technical handicraft lessons, Computer science, Economics, National language

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Customer orientation, Willingness to learn, Sense of responsibility, Kindness, Comprehension, Willingness to contact, Empathy, Communication skills, Negotiation skills, Ability to deal with conflicts, Sense of order, Assertiveness, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Handicraft, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Commercial skills, Logical thinking, Dexterity, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension

Interests: Communication, negotiation, sales psychology, vehicle maintenance, automobile mechanics.

Trends:

The gas sales have been largely unaffected by digitization, with alternative fuel options (electricity, methane) having little to no influence on the gas market and distribution – gas is a monitored and restricted substance and is unavailable to purchase online (e-commerce is thus far not possible). The trend is focusing on the self-service part at the station, with the customer making the entire pumping and purchasing at the pump itself, paying for the gas via built-in terminal with a card, completely contactless, with the gas station attendant overseeing the process either using the CCTV system or directly through the window from the sales counter.

Digitisation issues (e.g. specifications on different technologies, know-how):

The gas sales process in-store has remained largely unaffected by digitization, with the gas station attendant using the register (updated with a computer and card terminal) and the phone (to manage fuel purchases, communicate with management etc.). The surveillance technology – necessary considering the clients can leave the station very quickly with a vehicle – has been constantly updated with better resolution and storing capabilities.

Further training opportunities/courses: No significant further education

Alternative professions: Grocery attendant, direct sales representative, sales manager, store attendant, cashier.

Training abroad: For a gas station attendant, training abroad offers no additional value to the profession (aside from improving foreign language skills and improving cultural/social knowledge).

Further information:

https://www.ess.gov.si/ncips/cips/opisi_poklicev/opis_poklica?Kljuc=1561&Filter=

<https://core.ac.uk/download/pdf/67528728.pdf>

<https://www.sistechnology.bg/en/hardware/gas-station-self-service-terminal-537>

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<https://en.nps.dk/solutions/>

4. Selected core training professions from the ecological-green vocational field

The professional profiles described below were identified by the project partner from Scotland/UK (see detailed table above) and described with a focus on the English VET system. In relation to the ecological-green vocational field, professions from the field of environment, conservation and agriculture as well as from the field of recycling were identified that are affected by digitisation and may be known as training professions in other EU countries or could be established there as such in the near future. Due to the fact that the VET system in the UK is very differentiated, some of the professions described are very similar in terms of content and differ only in a few details. With regard to the aspects of training duration, type of training and further training opportunities, the representations refer to United Kingdom (Scotland) and may need to be adapted for other countries and their VET systems if necessary.

Recycling Site Operator

Short job description: The role of the Recycling Site operator involves sorting and reprocessing. Involves both manual and mechanical handling of green waste and transfers to containers for processing. This includes performing a range of local environmental services which may include collection and loading of waste and recyclable materials, sorting and preparation of recyclable material for processing and reuse. It is also a major role of the job to be competent in manual handling techniques.

Typical industries and operational areas: Recycling Site Centre Operators mainly work within the Environmental service industry that includes both public and private sector operators within the economy. This operator is mainly a member of a team working in the area of sorting and preparation of materials for recycling and processing.

Type of training: Recycling Site operators are recognised within the apprenticeship framework of Sustainable Resource Management that is assigned to Department of Training and Employability and recognised through the Energy and Utility Skills sector. However, the profession is trained in recycling and waste management businesses that represent trades relevant to industry. In Scotland, dual training takes place in the Company/Factory and Further Education College and within Private Training Providers.

Duration of the apprenticeship/training: 2 years (in Scotland at SCQF level 5 - SVQ 2 – EQF level 3).

Required previous education / school leaving certificate: For entry into this sector, there is now a requirement for a good secondary school leaving qualification. It should be noted that previously within this sector the manual base recycling operator has traditionally required a low skill level. However, as the sector of recycling becomes increasingly dependent on technology and more technology is deployed throughout the industry, there will be a growing demand for higher levels of competency.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Technical handicraft lessons, Computer science, National language, English

Required social competencies in order to practice the profession: : Care, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Comprehension, Willingness to contact, Empathy, Communication skills, Ability to deal with conflicts, Ability to make decisions, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Eye-hand-coordination, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Orientation sense, Logical thinking, Dexterity, Text comprehension

Interests: Working with others, customer development, active social activities, digital technology, general engineering, craft and technology, quality control, self-development, diligence, awareness, accuracy of planning and continuous development.

Trends:

The waste management and recycling industry may be defined as: “The collection, transportation, disposal and recycling of waste materials, including the supervision of such operations and the after-care of disposal sites, and including actions taken as a dealer or broker.”

The Apprenticeship in Sustainable Resource Management provides local authorities the prospect to address the current and future skills shortages throughout the recycle/waste management sector. It provides the development of occupational competence in a wide range of job roles in the collection, transfer, treatment and final disposal of materials and resources. The Apprenticeship programme will attract new entrants by providing a structured route to job competence and career progression. It provides the pathway for employers to “grow their own” workforce where technically competent individuals are increasingly difficult to recruit. Within the recycle/waste management sector and the role of Recycling Site Operator production processes are increasingly digitised, and embedding new digitalised systems and the involvement of IT skills are becoming more important. Across the EU and UK reforms are being made by central Governments, this includes the amendments to apprenticeships and policy, this includes the introduction of a more technical recycle operator and of more technical skill qualifications and an improved technical education at higher national levels 4 and 5.

Across the EU and UK, the sector is formulating to play an essential role over the next strategic period in contributing to a circular economy. For this to take place it is essential that the workforce of the future have a full understanding and an affiliation with technology, possessing the knowledge, skills and behaviours to use Information Technology to best suit the industry.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, recycle site operators will have to deal with new technologies that will change their field of work due to increasing digitisation meaning a greater influence of higher technical skills. Additional need for technically skilled employees to maintain and operate within environmental and recycling sectors is expected as sectoral growth continues. These include: Using ICT devices, using digital services and applications, using different digital environments and applications in their work tasks. The use of Information and Communication Technology, Automate Processes which may include monitoring apps for production processes, measuring points for machine monitoring, embedded systems (e.g. checking of embedded systems in the recycling processes and machines). Other technology will include: big data integrated sensors (e.g. checking sensors – collating data), predictive maintenance (e.g. ongoing evaluation of machine / system data to minimise down time), networked production systems (e.g. handling digital production systems), 4.0 technology skills and the use of digital models for the transfer of knowledge and information.

Further training opportunities/courses: 1. Goods and materials that are suitable for recycling. 2. Organisational procedures and specifications for recycling or disposal of goods and materials. 3. Sources of information on the status of different types of goods and materials. 4. Problem arising from recycling or disposal of goods and materials. 5. Roles and responsibilities of different co-workers. 6. Legal, safety and operating requirements relating to recycling or disposal of goods.

Alternative professions: Environmental conservation; Transportation operations and maintenance; Retailing and wholesaling; Warehouse and distribution; Managers in Distribution, Storage and Retail; General; Skilled Trades Occupations; Transport Drivers and Operatives; Elementary Goods Storage Occupations

Training abroad: Across EU and UK the sector is formulating to play an essential role over the next strategic period in delivering net zero, hence training in this sector is essential and available for all EU and UK workforces.

Further information:

[Search Results | Skills Development Scotland](#)

[A FRAMEWORK FOR A \(skillsdevelopmentscotland.co.uk\)](#)

[SVQ Frontline Environmental Services at SCQF level 5 - GR8C 22 - SQA](#)

[Energy & Utilities Jobs - Energy & Utility Skills \(euskills.co.uk\)](#)

[Workforce Renewal and Skills Strategy 2020 - 2025: Response and Refresh - Energy & Utility Skills \(euskills.co.uk\)](#)

Recycling Centre/Site Engineer

Short job description: The role of the Recycling Centre/Site Engineer involves recycling plant maintenance, they keep all the factory engineering assets in good repair and running order. They monitor and test equipment, diagnose faults, carryout maintenance routines and where necessary dismantle and reassemble equipment.

Typical industries and operational areas: Recycling Centre Engineers mainly work within the Environmental Service Industry which includes both private and public sectors of the economy. In detail, they are part of the apprenticeship in Process Manufacturing and will undertake specific competency based training in a specific qualification sector. This would be within one or two specific trainings; Process “Engineering Maintenance (Mechanical)” or “Process Engineering Maintenance (Electrical)” at EQF level 5.

Type of training: Recycling Site Engineers are recognised within the apprenticeship framework of Process Manufacturing Management that is assigned to Department of Training and Employability and recognised through the Engineering and Energy Skills sector. However, the profession is trained in Process Operation, Engineering Maintenance and Process Engineer which duties involve start up, control, monitor and shutdown subsystems to maintain safe operations and achieve production targets. Within recycling and waste management businesses that represent trades relevant to industry. In Scotland, dual training takes place in the Company/Factory and Further Education College and within Private Training Providers.

Duration of the apprenticeship/training: 3.5 - 4 years (in Scotland at SCQF level 6 - SVQ 3 – EQF level 5).

Required previous education / school leaving certificate: For entry into this industrial sector, it is recommended that trainees have a good school-leaving qualification. It should be noted; that this apprenticeship training is designed to attract quality trainees into the sector; a good school leaving qualifications is a representative method of assessing the suitability of trainees. Nonetheless, it should be emphasised that young people should not be discouraged from applying for an Apprenticeship because of a lack of formal learning qualifications.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Technical handicraft lessons, Computer science, National language, English

Required social competencies in order to practice the profession: Care, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Comprehension, Willingness to contact, Empathy, Communication skills, Ability to deal with conflicts, Ability to make decisions, Assertiveness, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Eye-hand-coordination, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Orientation sense, Logical thinking, Dexterity, Text comprehension

Interests: Working with others, customer development, active social activities, digital technology, general engineering, electrical investigation, technical engineering, craft and technology, quality control, self-development, diligence, awareness, accuracy of planning and continuous development.

Trends:

The Apprenticeship in Recycle Site Engineer provides recycling processing centres the prospect to address the current and future skills shortages throughout the recycle/waste management/recycling sector. It provides the development of occupational competence in a wide range of engineering and maintenance job roles across the sector. The Apprenticeship programme will attract new entrants by providing a structured route to job competence and career progression. It provides the pathway for employers to “grow their own” workforce. Within the recycle/waste management sector, the role of Recycling Site Engineer production processes are increasingly digitised, and embedding new digitalised systems and the involvement of IT skills are becoming more important. Across the EU and UK reforms are being made by central Governments, this includes the amendments to apprenticeships and policy, this includes the introduction of a more technical recycle engineer and of more technical skill qualifications and an improved technical education at higher national levels 6 and 7, EQF level 5.

Across the EU and UK, the recycling sector is formulated to play an essential role over the next strategic period in delivering net zero and contributing to a circular economy. For this to take place it is essential that the workforce of the future have a full understanding and an affiliation with technology, possessing the knowledge, skills and behaviours to use Information Technology to best suit the industry.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, recycle site engineers will continue to deal with new technologies that will change their field of work due to increasing digitisation meaning a greater influence of higher technical skills. Additional need for technically skilled engineers to maintain and operate within environmental and recycling sectors is expected as sectoral growth continues.

These include: Using ICT devices, using digital services and applications, using different digital environments and applications in their work tasks.

The use of Information and Communication Technology, Automate Processes which may include monitoring apps for production processes, measuring points for machine monitoring, embedded systems (e.g. checking of embedded systems in the recycling processes and machines), the use of Cloud and Big Data integrated sensors (e.g. checking sensors – collating data), predictive maintenance (e.g. ongoing evaluation of machine / system data to minimise down time), networked production systems (e.g. handling digital production systems), 4.0 technology skills such as CNC and CAD and the use of digital models for the transfer of knowledge and information.

Further training opportunities/courses: On completion of this apprenticeship training there are several pathways open to the Recycling Engineer whom requirements to continue their further training opportunities in order to progress their career. There are various opportunities. These may include (but are not exclusive to) the following: 1. Degree in Process Engineering or a connected discipline 2. Higher National Certificate / Diploma in Engineering or a connected discipline 3. Develop their career through Assessor and Verifier Awards 4. Qualifications in a associated area, including Health and Safety, Training and Development, Business Improvement Techniques and Supervisory Management.

Alternative professions: Environmental conservation; Transportation operations and maintenance; Process Operator Technician, Control Room Operator Technician, Process Engineering Maintenance Craft/Technician (Electrical, Mechanical & Instrumentation), Refinery Control Room Operator/Technician

Training abroad: Across EU and UK the sector is formulating to play an essential role over the next strategic period in delivering net zero, hence quality Engineering training in this sector is essential and available for all EU and UK workforces.

Further information:

[Search Results | Skills Development Scotland](#)

[A FRAMEWORK FOR A \(skillsdevelopmentscotland.co.uk\)](https://www.skillsdevelopmentscotland.co.uk)

<https://www.sga.org.uk>

[Energy & Utilities Jobs - Energy & Utility Skills \(euskills.co.uk\)](#)

[Workforce Renewal and Skills Strategy 2020 - 2025: Response and Refresh - Energy & Utility Skills \(euskills.co.uk\)](#)

Green Engineer

Short job description: Today's young people will be tomorrow's Green and Technical Engineers helping to design and maintain solar panels, wind turbines, low emissions vehicles, power plants, eco-generators and other green economy technology. The role of the Green Engineer involves engineering and electrical plant maintenance; they keep all the company assets in good repair and running order. They monitor and test equipment, diagnose faults, carryout maintenance routines and where necessary dismantle and reassemble equipment.

Typical industries and operational areas: Green Engineers mainly work within the Service and Manufacturing Industry; this includes predominantly the private sectors of the economy. Green Engineers are including within "Apprenticeships in Performing Engineering" and "Electrical Manufacturing" and embark on detailed competency based training in a specific Engineering qualification sector.

This would be within one or two specific training environments; “Electrical Manufacture at EQF Level 5” and “Performing Engineering at EQF Level 4”. Core employment opportunities includes process design and development, mechanical production and electrical and electronic engineering – these sectors depend upon engineering skills and knowledge. This may also include Skills in the engineering and renewable energy sectors that require higher-level skilled staff member to meet demands of changing technology, engineering and manufacturing practices.

Type of training: Green Engineer training is embedded within the apprenticeship framework of “Performing Engineering Operations” and “Electrical Manufacturing” that is assigned to Department of Training and Employability and recognised through the Engineering and Energy Skills sector. The training includes tasks like start up, control, monitor and shutdown subsystems to maintain safe operations and achieve production targets. Other training include complying with statutory regulations and organisational safety requirements; interpreting engineering data and documentation; working efficiently and effectively in engineering; mounting electrical components in enclosures; wiring electrical components and equipment in enclosures; selecting and preparing materials and components for electrical assembly. In Scotland, dual training takes place in the Company/Factory and Further Education College and within Private Training Providers.

Duration of the apprenticeship/training: 3.5 - 4 years (in Scotland at EQF level 5).

Required previous education / school leaving certificate: For entry into this industrial sector, it is recommended that trainees have a good school-leaving qualification. It should be noted; that this apprenticeship training is designed to attract quality trainees into the sector; a good school leaving qualifications is a representative method of assessing the suitability of trainees. Nonetheless, it should be emphasised that young people should not be discouraged from applying for an Apprenticeship because of a lack of formal learning qualifications.

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Technology, Computer science, Physics, National language, English

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Willingness to contact, Empathy, Communication skills, Ability to deal with conflicts, Sense of order, Ability to make decisions, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Eye-hand-coordination, Technical understanding, Drawing skills, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Orientation sense, Logical thinking, Dexterity, Analytical skills, Text comprehension

Interests: Working with others, customer development, active social activities, digital technology, general engineering, electrical investigation, technical engineering, craft and technology, quality control, self-development, diligence, awareness, accuracy of planning and continuous development.

Trends:

As Green Engineering continues to change rapidly, staff that do not embrace and develop digital employability skills and new technical skills may not be able to meet future employer needs. Overall, this can affect individual employment and earning prospects, as well as their employer's productivity, competitiveness and meet further skills gaps and challenges. The sector also continues to recognise the major challenges regarding equal opportunities, diversity and gender balance within the industry and despite numerous high profile attempts to increase women participation such as the International Women in Engineering Day, women remain under-represented in engineering roles.

The Green Engineering Apprenticeship programme will attract new entrants by providing a structured route to job competence and career progression. It also provides the pathway for employers to "grow their own" workforce where technically competent individuals are increasingly difficult to recruit. Within Performing Engineering Operations and Electrical Manufacturing industry the role of the Green Engineer production processes are becoming increasingly digitised and embedding new digitalised systems and the involvement of IT skills are becoming more important.

Across the EU and UK, central Governments are making reforms; this includes the amendments to apprenticeships and policy. This includes the introduction of a more technical Green Engineer and of more technical skill qualifications and an improved technical education at the higher national EQF level 5.

Across the EU and UK, the environment/service sector is formulated to play an essential role over the next strategic period in delivering net zero and contributing to a circular economy. For this to take place it is essential that the Green Engineer of the future have a full understanding and an affiliation with technology, possessing the knowledge, skills and behaviours to use digitalisation to best suit the industry.

Digitisation issues (e.g. specifications on different technologies, know-how): In the future, Green Engineers will continue to deal with new technologies that will change their field of work due to increasing digitisation meaning a greater influence of higher technical skills. Additional need for technically skilled engineers to maintain and operate within Engineering Operations" and "Electrical Manufacturing sectors are expected as sectoral growth continues. This includes using ICT devices, using digital services and applications, using different digital environments and applications in their work tasks. The use of Information and Communication Technology, Automate Processes will include monitoring apps for production processes, measuring points for machine monitoring, embedded systems (e.g. checking of embedded systems in the Engineering and Electrical manufacturing processes and machines). It will also involve the use of Cloud and Big Data integrated sensors (e.g. checking sensors – collating data), predictive maintenance (e.g. ongoing evaluation of machine / system data to minimise down time), networked production systems (e.g. handling digital production systems), 4.0 technology skills such as CNC and CAD and the use of digital models for the transfer of knowledge and information.

Further training opportunities/courses: On completion of this Apprenticeship training there are several pathways open to the trainees who wishes to continue further training opportunities in order to progress their career. There are various opportunities to continue to undertake further vocational training or academic qualifications. These may include (but are not exclusive to) the following. 1. Degree in Process Engineering or a related discipline 2. Higher National Certificate / Diploma in Engineering or a related discipline 3. Develop their career through Assessor and Verifier Awards 4. Qualifications in a related area, including Health and Safety, Training and Development, Business Improvement Techniques and Supervisory Management. 5. Membership of a professional institution at Engineering Technician level. 6. A technical Apprenticeship pathway. 7. A further Engineering discipline.

Alternative professions: Environmental Engineer; Manufacture and Maintenance Engineer; Process Technician, Marine Engineer, Process Engineering Maintenance Technician (Electrical, Mechanical & Instrumentation), Refinery Control Room Operator/Technician, Field Operator/Technician, Automotive Engineer, Aeronautical Engineer.

Training abroad: Across EU and UK the sector is formulating to play an essential role over the next strategic period in delivering Green Engineering skills, hence quality Engineering training in this sector is essential and available for all EU and UK workforces.

Further information:

[Search Results | Skills Development Scotland](#)

[A FRAMEWORK FOR A \(skillsdevelopment.scot.nhs.uk\)](http://www.skillsdevelopment.scot.nhs.uk)

<https://www.sga.org.uk>

[EAL – The Specialist Awarding Organisation for Engineering and Manufacturing | EAL Awards](#)

[Energy & Utilities Jobs - Energy & Utility Skills \(euskills.co.uk\)](http://www.euskills.co.uk)

[Workforce Renewal and Skills Strategy 2020 - 2025: Response and Refresh - Energy & Utility Skills \(euskills.co.uk\)](#)

Agricultural Operator

Short job description: It is recognised that the Agricultural Operator is seen as a highly specialized industrial profession and the type of work can vary from responding to incidents and emergencies across Agricultural Operator sectors such as monitoring and reporting on water levels, identifying and responding to flood incidents, operation and maintenance of water level systems, maintenance and repair of local boundaries, install and maintain site furniture, manage local habitats and control unwanted pests, disease and disorder amongst vegetation. Other trainings could involve preparation and maintenance of water machines and plant such as water boats, which will comprise of operating work boats and working within costal and marine environments, tree planting, hedge laying and the installation of drainage systems. The Agricultural Operator is expected to have a wide array of skills to keep the environmental machinery and equipment in good working order, this will involve a planned maintenance along with repair and diagnostic work. This training is suitable for young learners who have just left school and offers a number of progression routes.

And the Agricultural Operator has a wide variety of skills to consider, these can include the monitoring of health and safety in the environmental sector, the development of good practices and awareness of the sector, promotion and responsibilities of outdoor areas and site, and development of reports on the condition of the local environment. It will also include maintaining structures and surfaces, maintaining and repairing of public pathways, and the survey on the condition of the environment

Typical industries and operational areas: The agricultural operator is included within the land based industrial sector across the UK and EU and plays a very important role within the environmental sector, it can be split into 2 main working streams; Agricultural and Livestock. It includes the production and management of the environment and land for sustainable development, which in turn may include farming of land for both livestock or the growing of root crop and other field crop, vegetables, etc. the sector is also involved in non-food sectors such as energy crops and crops for the production of paper and other materials.

Type of training: The Agricultural Operator training is embedded within the apprenticeship framework that is assigned e.g. in Scotland to the Department of Training and Employability and recognised through the Food and Drink Skills sector and dedicated to the agriculture industry. Training involves the management of the environment, land and farm and also the management of crops, meat and fish may be considered as part of the sector training. Agricultural Operators will learn how to make the environment more sustainable and contribute to a better standard of living, the sector is suited to young people who enjoy working outdoor, it also provides the training and skills to operate land machinery such as tractors, forklifts and gain skills to work other practical equipment, work with livestock and help create a safe living environment.

Other parts of the Agricultural Operator training may include: Shearing sheep, Safe handling of pesticides, transporting of different types of animals, operation of a tractor, develop best agricultural practices, and core skills such as problem-solving, communication, time management, working with others and new META Skills. Studies involved lead to qualifications in agricultural crops, agricultural livestock, mixed farming, poultry production, agricultural science, sustainable farming, conservation and seed production. The training may include highly specialized training and involve working with a vast array of machines, equipment and materials from planting stock, working with livestock, working with chemicals and equipment such as chainsaws, harvesters and computer software. Training as an Agricultural Operator also includes the maintenance, servicing and repair of a full range of machines, apparatuses and tools used in up-to-date agriculture operations on equipment. Within Agriculture training would involve maintenance, servicing and repair across a wide range of machinery, this includes power equipment, pumps and irrigation equipment. processing equipment and other machinery such as chainsaws, pruners and mobile platforms, etc.

This training is assigned to EQF Level 4. Core employment opportunities includes Agriculture, this sector depend upon agricultural-based skills and knowledge. This may also include skills in the engineering and renewable energy that require higher-level skilled staff member to meet demands of changing technology and agricultural practices.

Duration of the apprenticeship/training: 3 years (in Scotland at EQF level 4).

Required previous education / school leaving certificate: For entry into this agricultural operator industrial sector, it is recommended that trainees have a good school-leaving qualification. It should be noted; that this apprenticeship training is designed to attract quality trainees into the sector; a good school leaving qualifications is a representative method of assessing the suitability of trainees. Nonetheless, it should be emphasised that young people should not be discouraged from applying for an Apprenticeship because of a lack of formal learning qualifications.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Computer science, Physics, National language, English, Science

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Willingness to contact, Empathy, Communication skills, Ability to deal with conflicts, Sense of order, Ability to make decisions, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Eye-hand-coordination, Technical understanding, Drawing skills, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Orientation sense, Logical thinking, Dexterity, Analytical skills, Text comprehension

Interests: Working with others, customer development, active social activities, digital technology, general engineering, engineering investigation, agricultural skills and the environment, technical engineering, craft and technology, quality control, self-development, diligence, awareness, accuracy of planning and continuous development. Furthermore interest in information and technology, be creative and inventive and a good technical mind.

Trends: As the skills of the Agricultural Operator continues to change rapidly, staff need to embrace and develop new digital employability skills and new technical skills to be able to meet future employer needs. Overall, this can affect individual employment and earning prospects, as well as improve their employer's productivity, competitiveness and meet further skills gaps and challenges.

The sector also continues to recognise the major challenges regarding equal opportunities, diversity and gender balance within the industry and despite numerous high profile attempts to increase women participation such as the International Women in Engineering Day, women remain under-represented in Agricultural Operator roles.

The Agricultural Operator Apprenticeship programme continues to attract new entrants by providing a structured route to job competence and career progression. It also provides the pathway for employers to "grow their own" workforce where technically competent individuals are increasingly difficult to recruit. Within the apprenticeship framework for the Agricultural Operator sector the processes are becoming increasingly digitised and embedding new digitalised systems and the involvement of IT skills are becoming more important. Pathways of Agriculture has a huge amount of new technology built into agricultural equipment and this is set to continually increase across the sector, through new equipment such as GPS, EV and air conditioning as prime examples. Across the EU and UK, central Governments are making reforms; this includes the amendments to apprenticeships and policy. This includes the introduction of a more technical skill qualifications and an improved technical education at the higher national EQF level 5.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, Agricultural Operators will continue to deal with new technologies that will change their field of work due to increasing digitisation meaning a greater influence of higher technical skills. The new Agricultural operator should have a full understanding and an affiliation with technology, possessing the knowledge, skills and behaviours to use digitalisation to best suit the industry. This includes using ICT devices, using digital services, using different digital environments and applications in their work tasks. The use of Information and Communication Technology, Automate Processes will include monitoring apps for production processes, measuring points for equipment and machine monitoring, embedded systems (e.g. checking of embedded systems in the Agricultural, Engineering and Electrical processes in equipment and machines). It will also involve the use of Cloud and Big Data integrated sensors (e.g. checking sensors – collating data), predictive maintenance (e.g. ongoing evaluation of machine / system data to minimise down time) networked production systems (e.g. handling digital production systems), 4.0 technology skills such as CNC and CAD and the use of digital models for the transfer of knowledge and information.

Further training opportunities/courses: On completion of this Apprenticeship training there are several pathways open to trainees who wishes to continue further training opportunities in order to progress their profession. There are various opportunities to continue to undertake further vocational training or academic trainings. These may include (but are not exclusive to) the following: 1. Degree in Process Engineering or a related discipline. 2. Diploma in Engineering or a related discipline. 3. Careers through Assessor and Verifier Awards

4. Qualifications in a related area, including Health and Safety, Training and Development, Business Improvement Techniques and Management. 5. A technical Apprenticeship pathway. 6. Service Technician, Field Service Engineer, Product Support and Sales. 7. Workshop Management.

Alternative professions: Further studying can lead to an agricultural degree in agricultural science or sustainable farming, or the Agricultural apprenticeship may lead into other direct employment in the sector such as farming, stock worker, agriculture scientist, assistant herder, poultry nutritionist, dairy manager or farm manager.

Training abroad: Across EU and UK the sector is formulating to play an essential role over the next strategic period in delivering Agricultural Operator skills, hence quality training in this sector is essential and available for all EU and UK workforces.

Further information:

[A FRAMEWORK FOR A \(skillsdevelopmentscotland.co.uk\)](https://www.skillsdevelopmentscotland.co.uk)

[SVQ Land-based Engineering \(Agriculture\) at SCQF levels 5 and 6 - SQA](#)

<https://www.sqa.org.uk>

www.skillsdevelopmentscotland.co.uk/media/33218/ma-framework-agriculture-at-scqf-level-5.pdf

www.skillsdevelopmentscotland.co.uk/media/41481/ma-framework-agriculture-at-scqf-level-6.pdf

www.skillsdevelopmentscotland.co.uk/what-we-do/apprenticeships/modern-apprenticeships/modern-apprenticeship-frameworks/

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Land based Engineer

Short job description: It is recognised that Land-Based Engineering is seen as a highly specialized profession and the type of work can vary from servicing and repairing large agricultural machinery such as combine harvester machines to smaller machines such as a lawn mower. To meet the need of the vast array of knowledge to work within this sector the Land-Based Engineer is expected to work on a wide range of specialist machinery and vehicles which are used in many places including, farming, forestry, ground care, sport facilities, parks, golf courses and other horticultural businesses. The Land-based Engineer is expected to keep the machinery and equipment in good working order, this will involve a planned maintenance along with repair and diagnostic work. Over the years, and the need for precision farming and land development there is a greater demand and reliance upon new technology training in many digital aspects of service engineering.

Within Agriculture training would involve maintenance, servicing and repair across a wide range of machinery, this includes combines, tractors, cultivators, power equipment, pumps and irrigation equipment. Arboriculture-Forestry training may involve maintenance, servicing and repair of equipment used commercially in timber related industries, tree harvesting, extraction, processing equipment and other machinery such as chainsaws, pruners and mobile platforms, etc. Within Ground Care the Land-based engineer may focus upon self-propelled and hand held equipment used in commercial and public industries, leisure and amenities such as golf, grass cutting and green-keeping.

Typical industries and operational areas: The land based industrial sector across the UK and EU has identified 3 distinct areas in which offers a clear pathway for the Land-based Engineer: Agriculture, Arboriculture-Forestry and Ground Care. Over the years and the continuous digital transformation of the sector which is now built into land-based equipment the Land-Based Engineers training includes the maintenance, servicing and repair of a full range of machines, apparatuses and tools used in up-to-date agriculture and many horticultural operations on equipment. They also work in garderies beside the agriculture as well as in workshops and for communities. In addition, they are working in the field of engineering and renewable energy that require higher-level skilled staff member to meet demands of changing technology, engineering and manufacturing practices.

Type of training: The Land-Based Engineer training is embedded within the apprenticeship framework that is assigned to Department of Training and Employability and recognised through the Engineering and Energy Skills sector and dedicated to the agriculture, horticulture, arboriculture, forestry and ground care industries. The profession is trained in a specific Land-Based Engineering Operation within the sector of agriculture, horticulture, arboriculture, forestry and ground care. Land-Based Engineering may include a wide number of training topics, training will take place in the form of Mechanical Principals, equipment and tools, material preparation, assembly, maintenance and servicing. There is also a need to understand the principals of Joining Skills, Cooling Systems and Lubrication Systems along with Health and safety Training. There will also be an element of inspection and testing using Digital Technology and other testing methods. The trainee will be expected to complete training across an array of land-based machinery for the repair of hydraulic systems and the service and repair of electronic control and monitoring systems on land-based equipment.

Duration of the apprenticeship/training: 3.5 - 4 years (in Scotland at EQF level 5).

Required previous education / school leaving certificate: For entry into this land-based engineering industrial sector, it is recommended that trainees have a good school-leaving qualification. It should be noted; that this apprenticeship training is designed to attract quality trainees into the sector; a good school leaving qualifications is a representative method of assessing the suitability of trainees. Nonetheless, it should be emphasised that young people should not be discouraged from applying for an Apprenticeship because of a lack of formal learning qualifications.

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Technology, Computer science, Physics, National language, English, Science

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Willingness to contact, Empathy, Communication skills, Ability to deal with conflicts, Sense of order, Ability to make decisions, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Eye-hand-coordination, Technical understanding, Drawing skills, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Orientation sense, Logical thinking, Dexterity, Analytical skills, Text comprehension

Interests: Working with others, customer development, active social activities, digital technology, general engineering, engineering investigation, land-based and the environment, technical engineering, craft and technology, quality control, self-development, diligence, awareness, accuracy of planning and continuous development. Trainees should also have a keen interest in information and technology, be creative and inventive and a good technical mind.

Trends:

As Land Based Engineering continues to change rapidly, staff need to embrace and develop new digital employability skills and new technical skills to be able to meet future employer needs. Overall, this can affect individual employment and earning prospects, as well as their employer's productivity, competitiveness and meet further skills gaps and challenges. The sector also continues to recognise the major challenges regarding equal opportunities, diversity and gender balance within the industry and despite numerous high profile attempts to increase women participation such as the International Women in Engineering Day, women remain under-represented in land based engineering roles.

The Land Based Engineering Apprenticeship programme continues to attract new entrants by providing a structured route to job competence and career progression. It also provides the pathway for employers to "grow their own" workforce where technically competent individuals are increasingly difficult to recruit. Within the apprenticeship framework for Land Based Engineering industry the processes are becoming increasingly digitised and embedding new digitalised systems and the involvement of IT skills are becoming more important. Land Based Engineering pathways which include Agriculture, Arboriculture/Forestry and Ground Care has a huge amount of new technology built into land-based equipment and this is set to continually increase across the sector, through new equipment such as GPS, EV and air conditioning as prime examples.

Across the EU and UK, central Governments are making reforms; this includes the amendments to apprenticeships and policy. This includes the introduction of a more technical Land-Based Engineer and of more technical skill qualifications and an improved technical education at the higher national EQF level 5.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, Land Based Engineers will continue to deal with new technologies that will change their field of work due to increasing digitisation meaning a greater influence of higher technical skills. The new Land-Based Engineer should have a full understanding and an affiliation with technology, possessing the knowledge, skills and behaviours to use digitalisation to best suit the industry. This includes Using ICT devices, using digital services and applications, using different digital environments and applications in their work tasks. The use of Information and Communication Technology, Automate Processes will include monitoring apps for production processes, measuring points for equipment and machine monitoring, embedded systems (e.g. checking of embedded systems in the Engineering and Electrical processes in equipment and machines). It will also involve the use of Cloud and Big Data integrated sensors (e.g. checking sensors – collating data), predictive maintenance (e.g. ongoing evaluation of machine / system data to minimise down time), networked production systems (e.g. handling digital production systems), 4.0 technology skills such as CNC and CAD and the use of digital models for the transfer of knowledge and information.

Further training opportunities/courses: On completion of this Apprenticeship training there are several pathways open to trainees who wishes to continue further training opportunities in order to progress their profession. There are various opportunities to continue to undertake further vocational training or academic trainings. These may include (but are not exclusive to) the following. 1. Degree in Process Engineering or a related discipline. 2. Diploma in Engineering or a related discipline. 3. Careers through Assessor and Verifier Awards 4. Qualifications in a related area, including Health and Safety, Training and Development, Business Improvement Techniques and Management. 5. A technical Apprenticeship pathway. 6. Service Technician, Field Service Engineer, Product Support and Sales. 7. Workshop Management.

Alternative professions: Environmental Engineer; Electrical and Maintenance Engineer; Process Testing Technician, Automotive Engineer, Process Engineering Maintenance Technician (Electrical, Mechanical & Instrumentation), Refinery Control Room Operator/Technician, Field Operator/Technician, Service, Repair and Diagnostic Technician.

Training abroad: Across EU and UK the sector is formulating to play an essential role over the next strategic period in delivering Land Based Engineering skills, hence quality Engineering/Electrical training in this sector is essential and available for all EU and UK workforces.

Further information:

[Search Results | Skills Development Scotland](#)

[A FRAMEWORK FOR A \(skillsdevelopmentscotland.co.uk\)](#)

[SVQ Land-based Engineering \(Agriculture\) at SCQF levels 5 and 6 - SQA](#)

<https://www.sqa.org.uk>

[EAL – The Specialist Awarding Organisation for Engineering and Manufacturing | EAL Awards](#)

[Energy & Utilities Jobs - Energy & Utility Skills \(euskills.co.uk\)](#)

[Workforce Renewal and Skills Strategy 2020 - 2025: Response and Refresh - Energy & Utility Skills \(euskills.co.uk\)](#)

[Microsoft Word - J3X945 \(sqa.org.uk\)](#)

[Qualifications Search - Find an SQA qualification - SQA](#)

Horticulture Operator

Short job description: Horticulture gardener delivers quality of life for people through the design, development and maintenance of green spaces, both public and private. They have a wide variety of skills to consider, these can include the monitoring of health and safety in the horticultural sector, the development of good practices and awareness of the sector, promotion and responsibilities of outdoor areas, green areas, parks and private landscapes. They also develop reports on the condition of the local environment and the rural countryside. It will also include research with plant varieties, new plant protection fertiliser formulas and the increasing use of organic sustainable substances within the sector. In detail belong to their working tasks also the work within the fields Plant Science, Soil Science, Plant Seed section and identification, Horticultural Therapy, Land Based Machinery, Estate Maintenance, Establish and Maintain Plants, Amenity Turf/Grass, Plant Propagation and the Identification and Control of Plant problems and disease. Other activities could involve tree planting, turf laying, hedge laying and the installation of drainage systems to regulate the soil. The Horticultural Operator may also be expected to have a wide array of skills to keep the environmental machinery and equipment in good working condition; this will involve a planned maintenance along with repair and diagnostic work.

Typical industries and operational areas: Within the Horticultural sector across the EU and further afield micro businesses (app. 40%) with employing max. 4 employees dominate the sector (Horticulture, Landscaping & Sport Turf Industry). The orientation of the landscaping sector involves a wide range of both businesses and employment pathways, which range between soft and hard landscaping and involves design, development and maintenance of both public and private green spaces.

Changes in many Government and local policies, and changes in rural land use have led to specific industries becoming critical to the sustainability of rural economies, production horticultural (food), being a major investment sector (this leading to larger businesses emerging across the sector. Beside companies they are working for communities and municipalities as well as in sports facilities. The sector is suited to young people who enjoy working outdoor, it also provides the training and skills to operate small land and garden equipment and machinery such as lawn mowers, cultivators, forklift, dumpers, small tractors and gain skills to work other practical equipment, and help create a safe living environment.

Type of training: This training is suitable for young learners who have just left school and offers a number of progression routes. The Horticultural Operator training is embedded within the apprenticeship framework that is assigned in Scotland to Department of Training and Employability and recognised through the Animal Care, Land and Water Based Sector and dedicated to the Horticulture industry. Training involves the having the knowledge to cultivate and propagate plants, and use this knowledge and skill gained through training to develop and deliver technical information on fruit, vegetable and flower growers, including farmers as necessary. Further training content is pest and disease investigation, and experiment with various varieties of plants to establish a greater resistance to disease. Other trainings may involve the field of Landscape, creation and design of gardens, recreational areas, including public and private parks/gardens with the aim of preservation of natural resources. Hence, Horticulturalist may also learn how to make the environment more sustainable.

It may also include supplementary training on pesticides, fertilizers, chipping, and training on the use of equipment such as mowers, cultivators, forklifts, dump trucks, tractors, and excavator training. Training also includes working with a variety of machines, equipment and materials used in the planting sector, working with fertilizers and equipment such as chain saws and the computer software of today's horticultural industry. They also learn how to maintain and repair the equipment they use.

Duration of the apprenticeship/training: 2 years (in Scotland at EQF level 3/4).

Required previous education / school leaving certificate: For entry into this horticulture operator industrial sector, it is recommended that trainees have a good school-leaving qualification. It should be noted; that this apprenticeship training is designed to attract quality trainees into the sector; a good school leaving qualifications is a representative method of assessing the suitability of trainees. Nonetheless, it should be emphasised that young people should not be discouraged from applying for an Apprenticeship because of a lack of formal learning qualifications.

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Technology, Computer science, Physics, National language, English, Science

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Willingness to contact, Empathy, Communication skills, Ability to deal with conflicts, Sense of order, Ability to make decisions, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Eye-hand-coordination, Technical understanding, Drawing skills, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Orientation sense, Logical thinking, Dexterity, Analytical skills, Text comprehension

Interests: Working with others, customer development, active social activities, digital technology, general mechanical engineering, horticulture skills and the environment, technical skills, craft and technology, quality control, self-development, diligence, awareness, accuracy of planning and continuous development. Trainees should also have a keen interest in information and technology, be creative and inventive and a good technical mind. Outdoor work and working in small groups.

Trends:

As the skills of the Horticultural Operator continues to change rapidly, staff need to embrace and develop new digital employability skills and new technical skills to be able to meet future employer needs. Overall, this can affect individual employment and earning prospects, as well as their employer's productivity, competitiveness and meet further skills gaps and challenges. The sector also continues to recognise the major challenges regarding equal opportunities, diversity and gender balance within the industry and despite numerous high profile attempts to increase women participation such as the International Women in Engineering Day, women remain under-represented in Horticultural Operator roles.

The Horticultural Operator Apprenticeship programme continues to attract new entrants by providing a structured route to job competence and career progression. It also provides the pathway for employers to "grow their own" workforce where technically competent individuals are increasingly difficult to recruit. Within the apprenticeship framework for the Horticultural Operator sector the processes are becoming increasingly digitised and embedding new digitalised systems and the involvement of IT skills are becoming more important. Pathways of Horticulture has a huge amount of new technology built into horticulture equipment and this is set to continually increase across the sector, through new equipment such as working with sensors and digitalised equipment as prime examples.

Across the EU and UK, central Governments are making reforms; this includes the amendments to apprenticeships and policy. This includes the introduction of a more technical skill qualifications and an improved technical education at the higher national EQF level 4/5.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, Horticultural Operators will continue to deal with new technologies that will change their field of work due to increasing digitisation meaning a greater influence of higher technical skills. The new Horticultural Operator should have a full understanding and an affiliation with technology, possessing the knowledge, skills and behaviours to use digitalisation to best suit the horticultural industry. This includes Using ICT devices, using digital services and applications, using different digital environments and applications in their work tasks. The use of Information and Communication Technology, Automate Processes will include monitoring apps and sensors for production processes, measuring points for equipment and embedded systems (e.g. checking of embedded systems in the Horticultural, Engineering and Electrical processes in equipment and machines). It will also involve the use of Cloud and Big Data integrated sensors (e.g. checking sensors – collating data), predictive maintenance (e.g. ongoing evaluation of machine / system data to minimise down time), networked production systems (e.g. handling digital production systems), 4.0 technology skills and the use of digital models for the transfer of knowledge and information.

Further training opportunities/courses/progression: On completion of this Apprenticeship Horticultural training there are several pathways open to trainees who wishes to continue further training opportunities in order to progress their profession. There are various opportunities to continue to undertake further vocational training or academic trainings. These may include (but are not exclusive to) the following: 1. Gardeners. 2. Interior Landscape designer. 3. Parks or Green Space Officer

4. Qualifications in a related area, including Health and Safety, Training and Development, Business Improvement Techniques and Management. 5. Green keeper, Grounds Person – Sports, Golf, Turf. 6. Senior gardener or Horticulture Technician. 7. Horticultural Specialist/Production Horticulture.

Alternative professions: Further studying can lead to an Horticultural degree in horticultural science or sustainable planting, or the apprenticeship may lead into other direct employment in the sector such as botany, plant pathology, conservation, seed science or plant science.

Training abroad: Across EU and UK the sector is formulating to play an essential role over the next strategic period in delivering Horticulture Operator skills, Plant Growth, etc. hence quality training in this sector is essential and available for all EU and UK workforces.

Further information:

[A FRAMEWORK FOR A \(skillsdevelopmentscotland.co.uk\)](https://www.skillsdevelopmentscotland.co.uk)

[A FRAMEWORK FOR A \(skillsdevelopmentscotland.co.uk\)](https://www.skillsdevelopmentscotland.co.uk)

www.skillsdevelopmentscotland.co.uk/media/33365/ma-framework-horticulture-at-scqf-level-6.pdf

www.skillsdevelopmentscotland.co.uk/media/33368/ma-framework-horticulture-at-scqf-level-5.pdf

[www.skillsdevelopmentscotland.co.uk/what-we-do/apprenticeships/modern-apprenticeships/modern-apprenticeship-frameworks/Animal Care, Land & Water Based | Skills Development Scotland](https://www.skillsdevelopmentscotland.co.uk/what-we-do/apprenticeships/modern-apprenticeships/modern-apprenticeship-frameworks/Animal_Care_Land_Water_Based_Skills_Development_Scotland)

[Qualifications Search - Find an SQA qualification - SQA](#)

General Farm Worker

Short job description: It is recognised; that working as Farm Worker/Operator is identified as working in a highly evolving sector and that technology is driving many advances, such as the use sensors to monitor many aspect of the profession which will involve energy consumption, and wireless control sensors for water systems, etc. Employment in the farm worker/rural sector may involve working within optional skills such as tractor driving, practical hedge laying, the use of Land Based Machinery, Estate Maintenance, Establish and Maintain Plants, Plant Propagation and the Identification and Control of Plant problems and disease. Other activities could involve tree planting, hedge laying and the installation of drainage systems to regulate the soil. In addition, they work with animals (e.g. breeds them, cares for them, animal husbandry, etc.). Furthermore they need a wide array of skills to keep the environmental machinery and equipment in good working condition; this will involve a planned maintenance along with repair and diagnostic work.

Typical industries and operational areas: The Farm worker is included within the animal care, land and water based industrial sector across the UK and EU and plays a very important role within the environmental sector. Within the farm/rural sector across the EU the farm worker works in farming and raising animals, growing produce including non-edible crops like flowers, forestry, market gardens and nurseries. As a general Farm Worker, other duties are to carry out practical work on livestock, or mixed farms. Work varies seasonally and involves tasks that includes looking after livestock, milking, and planting, tending and harvesting crops. In general, Farm Workers plant, cultivate and harvest crops, raise livestock and poultry, and maintain and repair farm equipment and buildings. Their duties can include: plant, fertilize, cultivate, spray, irrigate and harvest crops, feed and tend livestock and poultry. But they also work in large companies that produce groceries.

Furthermore they are employed in the production and management of the environment and land for sustainable development, which in turn may include landscaping, field crop, vegetables, etc. And it is recognised, that the Farm Operator possess a wide range of practical and technical skills and knowledge to meet the substantial variety of jobs and tasks involved across the sector. Training as a Farm Operator also includes the maintenance, servicing and repair of a full range of small plant machines, apparatuses and tools used in up-to-date farming operations on equipment.

Type of training: This training is suitable for young learners who have just left school and offers a number of progression routes. The Farm Operator training is embedded within the apprenticeship framework that is allocated in Scotland to the Department of Training and Employability, recognised through the Animal Care, Land and Water Based Sector, and dedicated to the agricultural industry. It is recognised that although the areas of work within farming includes working with plants and animals, they have different outcomes, which means that the process and equipment used can differ from one another. Therefore, training involves the having the knowledge to farm, cultivate and propagate plants, and use this. Trainees will complete training in the monitoring of crops in accordance with specifications, identify potential problems and risks with the crop and take appropriate action, select methods of reducing risks to crops from pests, diseases and disorders to attain the best balance between production requirements. Training ensures work is completed in a manner that minimises environmental damage; ensures waste is dealt with safely and correctly in accordance with local legislation. Furthermore they are training in animal husbandry and all subtopics that belong to it (like animal feeding, breeding, care etc.)

Also the training impart the skills to operate small land and farm equipment and machinery such as cultivators, tractors, Chainsaws Brushwood Chippers, strimmer's and gain skills to work other practical equipment, and help create a safe working/living environment.

Duration of the apprenticeship/training: 24 Months (in Scotland EQF level 4).

Required previous education / school leaving certificate:

There are no qualification requirements to apply for this apprenticeship. However, an enthusiasm for learning is highly valued by potential employers. Providing evidence of previous practical experience in rural skills is also beneficial.

There are no entry qualification requirements to apply for this apprenticeship pathway. However, it is recognised that employers are looking for a highly enthusiastic learner, and this is highly valued. It is also beneficial for the learner to show previous practical rural skill experience.

For entry into this farm operator sector, it is recommended that trainees have a good school-leaving qualification. This apprenticeship training is designed to attract quality trainees into the sector; a good school leaving qualifications is a representative method of assessing the suitability of trainees. Nevertheless, it should be stressed that young people should not be discouraged from applying for an Apprenticeship because of a lack of formal learning qualifications.

Core skills such as problem solving, communication, time management, working with others and new META Skills are a pre-requirement within the sector.

Required school subjects, in which subjects potential trainees should perform well:

Mathematics, Technology, Computer science, Physics, National language, English, Science

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Willingness to contact, Empathy, Communication skills, Ability to deal with conflicts, Sense of order, Ability to make decisions, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Eye-hand-coordination, Technical understanding, Drawing skills, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Orientation sense, Logical thinking, Dexterity, Analytical skills, Text comprehension

Interests: Working with others, customer development, active social activities, digital technology, general mechanical engineering, rural/farming skills and the environment, technical skills, craft and technology, quality control, self-development, diligence, awareness, accuracy of planning and continuous development. Trainees should also have a keen interest in information and technology, be creative and inventive and a good technical mind. Furthermore outdoor work and working in small groups.

Trends:

As the skills of the Rural/Farm Operator continues to change rapidly, staff need to embrace and develop new digital employability skills and new technical skills to be able to meet future employer needs. Overall, this can affect individual employment and earning prospects, as well as their employer's productivity, competitiveness and meet further skills gaps and challenges. The sector also continues to recognise the major challenges regarding equal opportunities, diversity and gender balance within the industry and despite numerous high profile attempts to increase women participation such as the International Women in Engineering Day, women remain under-represented in Farm Operator roles.

The Rural/Farm Operator Apprenticeship programme continues to attract new entrants by providing a structured route to job competence and career progression. It also provides the

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, Rural/Farm Operators will continue to deal with new technologies that will change their field of work due to increasing digitisation meaning a greater influence of higher technical skills. The new Rural/Farm Operators should have a full understanding and an affiliation with technology, possessing the knowledge, skills and behaviours to use digitalisation to best suit the industry. This includes using ICT devices, using digital services and applications, using different digital environments and applications in their work tasks. The use of Information and Communication Technology, Automate Processes will include monitoring apps and sensors for production processes, measuring points for equipment and embedded systems (e.g. checking of embedded systems in the Farming Sector, including Electrical processes in equipment and machines). It will also involve the use of Cloud and Big Data integrated sensors (e.g. checking sensors – collating data), predictive maintenance (e.g. ongoing evaluation of machine / system data to minimize down time networked production systems (e.g. handling digital production systems), 4.0 technology skills and the use of digital models for the transfer of knowledge and information.

Further training opportunities/courses/progression: On completion of this Apprenticeship there are several pathways open to trainees who wishes to continue further training opportunities in order to progress their profession. There are various opportunities to continue to undertake further vocational training or academic trainings. These may include (but are not exclusive to) the following: 1. Environmental Management/Officer, 2. Senior Ranger, 3. Estate Supervisor 4, Qualifications in a related area, including Health and Safety, Training and Development, Business Improvement Techniques and Management, 5. Wildlife Manager, 6. Conservation Officer.

Alternative professions: Further studying can lead to an Horticultural/Agricultural degree in horticultural/agricultural science or estates management, or the apprenticeship may lead into other direct employment in the sector such Agriculture, horticulture and Animal Care; Arboriculture and forestry; Coppicing; Estate Worker; Ranger; Access Officers; Conservation Officer; Property Manager.

Training abroad: Across EU and UK the sector is formulating to play an essential role over the next strategic period in delivering Rural/Farm Operator skills hence quality training in this sector is essential and available for all EU and UK workforces.

Further information:

[A FRAMEWORK FOR A \(skillsdevelopmentscotland.co.uk\)](https://www.skillsdevelopmentscotland.co.uk)

www.skillsdevelopmentscotland.co.uk/media/41065/ma-rural-skills-level-3.pdf

www.skillsdevelopmentscotland.co.uk/media/41064/ma-rural-skills-level-2.pdf

[www.skillsdevelopmentscotland.co.uk/what-we-do/apprenticeships/modern-apprenticeships/modern-apprenticeship-frameworks/Animal Care, Land & Water Based | Skills Development Scotland](https://www.skillsdevelopmentscotland.co.uk/what-we-do/apprenticeships/modern-apprenticeships/modern-apprenticeship-frameworks/Animal_Care_Land_&_Water_Based_Skills_Development_Scotland)

[Qualifications Search - Find an SQA qualification - SQA](#)

[Develop an awareness of environmental good practice \(sqa.org.uk\)](https://www.sqa.org.uk)

[Plan and oversee work to create or manage habitats \(sqa.org.uk\)](https://www.sqa.org.uk)

<https://www.sqa.org.uk/sqa/files/aq/H72304.pdf>

[H50V04.pdf \(sqa.org.uk\)](https://www.sqa.org.uk)

Environmental Technician

Short job description: Environmental technicians identify and perform activities around environmental sustainability and prepare and maintain local recycled waste, contributing towards a safe working environment. Environmental technicians work to protect, manage, plan site assessment in the environmental sector and enhance land-based and recycle working habitats. They may study and set parameters of assessment, and determine and evaluate systems and methods of data collection. Environmental technicians work to develop an awareness of the environment, developing good environmental practices, to plan, develop and run environmental projects, this includes both gathering and analyzing environmental data. The role of the Environmental technician involves developing competences in environmental awareness, environmental protection and working within the environmental technology sectors. Within the sector of environmental protection there are increasing efforts to reduce energy consumption, reduce pollutants, make them less hazardous and increase recycling. In addition, the job will include Recycling Technologies, utilizing Renewable Materials, Waste Management, Land-Based Environment Protection and develop growth within the Environmental sector. Furthermore they recognize and deal with hazards associated with pollution and recommend suitable measures to minimize environmental impact where necessary.

Typical industries and operational areas: Environmental Technicians mainly work within the Land Based or Service Industry; this includes predominantly the private sectors of the economy. Environmental Technicians are included within “Apprenticeships in Life Sciences and Related Industries”.

Employment sectors that may fall within the area of the Environmental Technician may include site management, and environmental technician within land-based, aquaculture and environmental conservation industries and environmental recycle sectors. They may also monitor and test equipment, diagnose faults, carryout maintenance routines, and where necessary, dismantle and reassemble equipment.

To the core operational areas belong Laboratory and Associated Technical industries, Industrial Sciences, Educational Sciences and Laboratory Skills training. Furthermore they work in environmental and renewable energy sectors that require higher-level skilled staff member to meet demands of changing technology within environmental sector and services practices.

Type of training: In Scotland, dual training takes place in the Company/Factory and Further Education College and within Private Training Providers. Environmental Technician training may include a wide array of trainings; Environmental awareness, Environmental design, Environmental modelling, Planning and Managing waste site, Recycle site assessment, Conducting land-based site assessment for environmental issues, Health and Safety assessment, Development of Environmental good practice, how to deal with pollution incidents, Manage Land-based sites and the environmental sector.

Further training contents are: Complying with statutory regulations and organizational safety requirements; interpreting environmental/conservation data and documentation. Effective ways of presenting site management plans and their specifications to those involved, the importance of maintaining complete and accurate records as required by relevant legislation, assurance of appropriate measures to protect and maintain the safety of the public from the pollution incident, environmental sustainability.

Furthermore the training is suitable for learners to broaden their knowledge and experience within the environmental sector, including land-based, aquaculture and environmental conservation industries.

Duration of the apprenticeship/training: 3/4 years (EQF level 4/5).

Required previous education / school leaving certificate: For entry into this industrial sector, it is recommended that trainees have a good school-leaving qualification. It should be noted; that this apprenticeship training is designed to attract quality trainees into the sector; a good school leaving qualifications is a representative method of assessing the suitability of trainees. Nonetheless, it should be emphasized that young people should not be discouraged from applying for an Apprenticeship because of a lack of formal learning qualifications.

Required school subjects, in which subjects potential trainees should perform well:

Mathematics, Technology, Computer science, Physics, Biology, Chemistry National language, English, Science

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Willingness to contact, Empathy, Communication skills, Ability to deal with conflicts, Sense of order, Ability to make decisions, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Eye-hand-coordination, Craft skills, Technical understanding, Drawing skills, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Orientation sense, Logical thinking, Dexterity, Analytical skills, Text comprehension

Interests: Working with others, customer development, active social activities, digital technology, life sciences, general engineering, conservation/environmental investigation, conservation, technical engineering, craft and technology, quality control, self-development, diligence, awareness, accuracy of planning and continuous development.

Trends:

As environmental issues continues to change rapidly, staff that do not embrace and develop digital employability, skills and new technical skills may not be able to meet future employer needs. Overall, this can affect individual employment and earning prospects, as well as their employer's productivity, competitiveness and meet further skills gaps and challenges. The environmental sector continues to recognize the major challenges regarding equal opportunities, diversity and gender balance within the industry and through numerous high profile events; this is now reflected with more women studying or will be trained within this sector.

The Environmental Technician Apprenticeship programme continues to attract new entrants by providing a structured route to job competence and career progression. It also provides the pathway for employers to "grow their own" workforce where technically competent individuals are increasingly difficult to recruit.

The role of the Environmental Technician is becoming increasingly digitised and embedding new digitalised systems and the involvement of IT skills are becoming more important. Across the EU and UK, central Governments are making reforms; this includes the amendments to apprenticeships and policy. This includes the introduction of a higher technical skill qualifications and an improved technical education at the higher national EQF level 6/7.

Across the EU and UK, the conservation/environment/service sector is formulated to play an essential role over the next strategic period in delivering net zero and contributing to a circular economy. For this to take place, it is essential that the environmental technician of the future have a full understanding and an affiliation with technology, possessing the knowledge, skills and behaviours to use digitalisation to best suit the industry.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, Environmental Technicians will continue to deal with new technologies that will change their field of work due to increasing digitisation meaning a greater influence of higher technical skills. Additional need for technically skilled environmental operators to maintain and operate within "Environmental Operations", "Life-Science" and "Land and Water Based" sectors are expected as sectoral growth continues. This includes Using ICT devices, using digital services and applications, using different digital environments and applications in their work tasks. The use of Information and Communication Technology, Automate Processes will include monitoring apps for production processes, measuring points for environmental monitoring, pollution monitoring, embedded systems (e.g. checking of embedded systems in the Land and Water based processes and machines). It will also involve the use of Cloud and Big Data integrated sensors (e.g. checking sensors – collating data), predictive maintenance (e.g. ongoing evaluation of system data to minimise down time), networked production systems (e.g. handling digital production systems), 4.0 technology skills such as digital design and CAD and the use of digital models for the transfer of knowledge and information.

Further training opportunities/courses: On completion of this Apprenticeship training there are several pathways open to the trainees who wishes to continue further training opportunities in order to progress their career. There are various opportunities to continue to undertake further vocational training or academic qualifications.

These may include (but are not exclusive to) the following: 1. Environmental Management. 2. Degree in Life Sciences/Environment or a related discipline 3. Higher National Certificate / Diploma in Environmental or a related discipline 4. Investigating ecosystems and biodiversity 5. Qualifications in a related area, including Health and Safety, Training and Development, 6. Business Improvement Techniques and Supervisory Management. 7. Human influences on Biodiversity. 8. A technical apprenticeship pathway. 9. A further Environmental discipline. 10. Rural and Land Management.

Alternative professions: Laboratory Attendant, Laboratory Technician, Agriculture Technician; Refinery Control Room Operator/Technician, Field Operator/Technician, Professional Technologist, Technical Processor, Life Science Technician, Environmental Site Manager, Land-Based Assessor.

Training abroad: Across EU and UK the sector is formulating to play an essential role over the next strategic period in delivering Environmental skills, hence quality training in this sector is essential and available for all EU and UK workforces.

Further information:

www.sqa.org.uk/sqa/controller?p_service=Front.searchUnits&q=0&pMenuID=117&t=nq_unit%2Chn_unit%2Ccaq_unit%2Cacd_unit%2Cqcf_unit&q=Environmental&Submit=Search

www.skillsdevelopmentscotland.co.uk/news-events/2015/october/careers-in-the-land-based-aquaculture-and-environmental-conservation-industries/

www.skillsdevelopmentscotland.co.uk/media/48725/ma-framework-life-sciences-at-scqf-level-6.pdf

www.skillsdevelopmentscotland.co.uk/media/33425/ma-framework-life-sciences-at-scqf-level-7.pdf

www.skillsdevelopmentscotland.co.uk/media/40660/ma-framework-sustainable-resource-management-at-scqf-level-5.pdf

www.sqa.org.uk/sqa/files/nq/SCQF6UnitSpecEnvironmentalScienceSustainability.pdf

www.sqa.org.uk/files/nu/SCQF6UnitSpecEnvironmentalScienceSustainability.pdf

www.sqa.org.uk/sqa/files_ccc/n2-course-spec-science-in-environment.pdf

www.sqa.org.uk/sqa/files/aq/HA0G04.pdf

www.sqa.org.uk/sqa/files/aq/HA0H04.pdf

www.sqa.org.uk/sqa/files/aq/H45L04.pdf

www.sqa.org.uk/sqa/controller?p_service=Front.searchUnits&q=0&pMenuID=117&t=nq_unit%2Chn_unit%2Ccaq_unit%2Cacd_unit%2Cqcf_unit&q=HA0L&Submit=Search

www.skillsdevelopmentscotland.co.uk/media/45498/ma-framework-rural-land-use-and-management-at-scqf-level-8.pdf

www.skillsdevelopmentscotland.co.uk/news-events/2015/october/careers-in-the-land-based-aquaculture-and-environmental-conservation-industries/

Conservation Technician

Short job description: Conservation technicians work to protect, manage and enhance landscapes, habitats and species, including woodland, grassland, wetland, moorland and marine habitats. Today's young people will be tomorrow's Conservation Technical worker, helping to develop an awareness of the environment, developing good environmental practices, to plan, run and environmental projects. The role of the Conservation Technician involves developing competences in environmental awareness, environmental protection and working within the environmental technology sectors. Within the sector of environmental protection there are increasing efforts to reduce energy consumption, reduce pollutants, make them less hazardous and increase recycling. In addition, the job will include recycling technologies, utilizing renewable materials, Waste management, Land-Based Environment Protection and develop growth within the Environmental sector. Employment sectors that may fall within the area of the Conversation Technician may include: Electrical Engineering/Heating Engineer (solar and heating Pumps); Construction Engineering and Home Technology; refrigeration and Air Conditioning Engineering. Engineering and Electrical plant maintenance; they keep all the conservation assets in good repair and running order. They monitor and test equipment, diagnose faults, carryout maintenance routines and where necessary dismantle and reassemble equipment.

Typical industries and operational areas: Conservation/Environmental Technicians mainly work within the Land Based or Service Industry; this includes predominantly the private sectors of the economy. The sector has gone through server major changes in the past few years, and employers identify skills important to the sector such as wider skills across the land-based, aquaculture and environmental conservation industries. To the most important operational areas belong process design and development within conservation, the sector depends upon environment good practices, construction technology, land-based development and engineering skills and knowledge. This may also include Skills in the conservation, engineering and renewable energy sectors that require higher-level skilled staff member to meet demands of changing technology within conservation engineering and manufacturing practices.

Type of training: Conservation training is embedded within the apprenticeship framework of "land-based, aquaculture and the environmental industries" that is assigned to Department of Training and Employability and recognized across various skill sectors. The profession is trained in: Development of awareness in Environmental Good practice, Conservation Health and safety, project Evaluation, Construction and Maintenance of Land-based Site Infrastructure, Develop and Implement Plans to Reduce and Manage Waste, Plan and Manage Site Assessments in the Land-based and Environmental Sector, Conduct Site Assessments in the Land-based and Environmental Sector, Monitor and Report on Environmental Change, Identify Areas at Risk of Flooding. Learners may engage in further training within the Engineering and Energy Sectors.

Other training includes; complying with statutory regulations and organisational safety requirements; interpreting environmental/conservation data and documentation. In Scotland, dual training takes place in the Company/Factory and Further Education College and within Private Training Providers.

Duration of the apprenticeship/training: 3/4 years (in Scotland at EQF level 5/6).

Required previous education / school leaving certificate: For entry into this industrial sector, it is recommended that trainees have a good school-leaving qualification. It should be noted; that this apprenticeship training is designed to attract quality trainees into the sector; a good school leaving qualifications is a representative method of assessing the suitability of trainees.

Nonetheless, it should be emphasised that young people should not be discouraged from applying for an Apprenticeship because of a lack of formal learning qualifications.

Required school subjects, in which subjects potential trainees should perform well:

Mathematics, Technology, Computer science, Physics, Chemistry, National language, English, Science

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Willingness to contact, Empathy, Communication skills, Ability to deal with conflicts, Sense of order, Ability to make decisions, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Eye-hand-coordination, Craft skills, Technical understanding, Drawing skills, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Orientation sense, Logical thinking, Dexterity, Analytical skills, Text comprehension

Interests: Working with others, customer development, active social activities, digital technology, general engineering, conservation/environmental investigation, conservation, technical engineering, craft and technology, quality control, self-development, diligence, awareness, accuracy of planning and continuous development.

Trends:

As Conservation continues to change rapidly, staff that do not embrace and develop digital employability skills and new technical skills may not be able to meet future employer needs. Overall, this can affect individual employment and earning prospects, as well as their employer's productivity, competitiveness and meet further skills gaps and challenges. The conservation sector continues to recognize the major challenges regarding equal opportunities, diversity and gender balance within the industry and through numerous high profile event this is now reflected with more women studying within this sector.

The Conservation Technician Apprenticeship programme continues to attract new entrants by providing a structured route to job competence and career progression. It also provides the pathway for employers to "grow their own" workforce where technically competent individuals are increasingly difficult to recruit.

The role of the Conservation Technician is becoming increasingly digitised and embedding new digitalised systems and the involvement of IT skills are becoming more important. Across the EU and UK, central Governments are making reforms; this includes the amendments to apprenticeships and policy. This includes the introduction of a technical skill qualifications and an improved technical education at the higher national EQF level 6.

Across the EU and UK, the conservation/environment/service sector is formulated to play an essential role over the next strategic period in delivering net zero and contributing to a circular economy. For this to take place it is essential that the Conservation technician of the future have a full understanding and an affiliation with technology, possessing the knowledge, skills and behaviours to use digitalisation to best suit the industry.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, Conservation Technicians will continue to deal with new technologies that will change their field of work due to increasing digitisation meaning a greater influence of higher technical skills. Additional need for technically skilled conservation operators to maintain and operate within "Conservation Operations" and "Land and Water Based" sectors are expected as sectoral growth continues.

This includes Using ICT devices, using digital services and applications, using different digital environments and applications in their work tasks. The use of Information and Communication Technology, Automate Processes will include monitoring apps for production processes, measuring points for conservation monitoring, embedded systems (e.g. checking of embedded systems in the Land and Water based processes and machines). It will also involve the use of Cloud and Big Data integrated sensors (e.g. checking sensors – collating data), predictive maintenance (e.g. ongoing evaluation of machine / system data to minimize down time), networked production systems (e.g. handling digital production systems), 4.0 technology skills such as digital design and CAD and the use of digital models for the transfer of knowledge and information.

Further training opportunities/courses: On completion of this Apprenticeship training there are several pathways open to the trainees who wishes to continue further training opportunities in order to progress their career. There are various opportunities to continue to undertake further vocational training or academic qualifications. These may include (but are not exclusive to) the following. 1. Degree in Conservation or a related discipline 2. Higher National Certificate / Diploma in Conservation or a related discipline 3. Investigating ecosystems and biodiversity 4. Qualifications in a related area, including Health and Safety, Training and Development, Business Improvement Techniques and Supervisory Management. 5. Human influences on Biodiversity. 6. A technical apprenticeship pathway. 7. A further Environmental discipline. 8. Rural and Land Management.

Alternative professions: Agriculture Engineer; Manufacture and Maintenance Engineer; Process Technician, Marine Engineer, Process Engineering Maintenance Technician (Electrical, Mechanical & Instrumentation), Refinery Control Room Operator/Technician, Field Operator/Technician, Game-keeping and Wildlife Management, Fisheries Management, Forestry Conservation.

Training abroad: Across EU and UK the sector is formulating to play an essential role over the next strategic period in delivering Conservation skills, hence quality training in this sector is essential and available for all EU and UK workforces.

Further information:

www.sqa.org.uk/sqa/67067.html?origin=search

www.sqa.org.uk/sqa/76475.html?origin=search

[A FRAMEWORK FOR A \(skillsdevelopmentscotland.co.uk\)](http://www.skillsdevelopmentscotland.co.uk)

[Search Results | Skills Development Scotland](#)

<https://www.sqa.org.uk>

www.skillsdevelopmentscotland.co.uk/media/45498/ma-framework-rural-land-use-and-management-at-scqf-level-8.pdf

www.skillsdevelopmentscotland.co.uk/news-events/2015/october/careers-in-the-land-based-aquaculture-and-environmental-conservation-industries/

[Workforce Renewal and Skills Strategy 2020 - 2025: Response and Refresh - Energy & Utility Skills \(euskills.co.uk\)](#)

Recycling/Waste Team Leader

Short job description: Manages the day-to-day operational activities of a small team. Supervising reuse operations including collections, storage, sorting and sales activities and responsible for overseeing the work of one or more teams on refuse collection operations on Recycling Sites. The profession is ideal for people who are seeking work in the waste industry and for those already working in the sector who wish to prove their competence. Involves both manual and mechanical handling of green waste and transfers to containers for processing. This includes performing overseeing a range of local environmental services which may include collection and loading of waste and recyclable materials, sorting and preparation of recyclable material for processing.

Typical industries and operational areas: Recycling/Waste Team Leaders work within the Environmental service industry that includes both public and private sector operators within the economy. The Team Leader is the supervisor of a team working in the area of sorting and preparation of materials for recycling and processing. This involves overseeing the tasks associated with both mechanical and manual removal and dispersal of recycling materials and other waste. They work both indoors and outdoors. An important role of this employee is to become familiar with the procedures and policies A significant role of this worker is to be aware of the procedures and policies as well as the Health and Safety aspects of other operators such as the Recycling Site Operate. It is also a major role of the job to be competent in Manual Handling techniques.

Type of training: Recycling/Waste Team Leaders are recognised within the apprenticeship framework of Sustainable Resource Management that is assigned to Department of Training and Employability and recognised through the Energy and Utility Skills sector. However, the team leader is trained in many aspects recycling and waste management business that represent trades relevant to industry. In Scotland, dual training takes place in the Company/Factory and Further Education College and within Private Training Providers.

Duration of the apprenticeship/training: 2 years (in Scotland at SCQF level 5 - SVQ 2 – EQF level 3).

Required previous education / school leaving certificate: For entry into this profession, there is now a requirement for a good secondary school leaving qualification. Team Leaders in the industry have responsibility for overseeing the work of one or more teams, and leadership skills are desirable. However, as the sector of recycling becomes increasingly dependent on technology and more technology deployed throughout the industry, there will be a growing demand for higher levels of competency. No prior qualifications are required to undertake this qualification, although knowledge or experience of waste management would be an advantage.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Technical handicraft lessons, Computer science, National language, English

Required social competencies in order to practice the profession: Care, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Willingness to contact, Empathy, Communication skills, Negotiation skills, Ability to deal with conflicts, Sense of order, Ability to make decisions, Assertiveness, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Eye-hand-coordination, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Orientation sense, Logical thinking, Dexterity, Linguistic thinking, Text comprehension

Interests: Working with others, customer development, active social activities, digital technology, general engineering, craft and technology, quality control, self-development, diligence, awareness, accuracy of planning and continuous development.

Trends:

The waste management and recycling industry may be defined as: “The collection, transportation, disposal and recycling of waste materials, including the supervision of such operations and the after-care of disposal sites, and including actions taken as a dealer or broker.”

Based on this the Apprenticeship in Sustainable Resource Management provides local authorities and private sector employers in the future the prospect to address the current and future skills shortages throughout the recycle/waste management sector. It provides the development of occupational competence in a wide range of job roles in the management, collection, transfer, treatment and final disposal of materials and resources.

The Apprenticeship programme in Scotland as well as in other European countries will attract new entrants by providing a structured route to job competence and career progression. It provides the pathway for employers to “grow their own” workforce where technically competent individuals are increasingly difficult to recruit.

Within the recycle/waste management sector, and the role of Recycling Waste Team Leader Site production processes are increasingly digitised, and embedding new digitalised systems and the involvement of IT skills are becoming more important. Across the EU and UK reforms are being made by central Governments, this includes the amendments to apprenticeships and policy, this includes the introduction of a more technical recycle team leader, operator and of more technical skill qualifications and an improved technical education at higher national levels 4 and 5.

Across the EU and UK, the sector is formulating to play an essential role over the next strategic period in delivering net zero and contributing to a circular economy. For this to take place it is essential that the workforce of the future have a full understanding and an affiliation with technology, possessing the knowledge, skills and behaviours to use Information Technology to best suit the industry. It is expected that Recycling/Waste Team Leaders should continue further training around higher-level subject or related area, for example, Sustainable Resource Management at EQF L4/5 or a diploma in Waste Management Operations.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, recycle site team leaders will have to deal with new technologies that will change their field of work due to increasing digitisation meaning a greater influence of higher technical skills. Additional need for technically skilled employees to maintain and operate within environmental and recycling sectors is expected as sectoral growth continues. These include: Using ICT devices, using digital services and applications, using different digital environments and applications in their work tasks. The Team Leader should have some insight into these new digital developments. The use of Information and Communication Technology, Automate Processes, which may include monitoring apps for production processes, measuring points for machine monitoring, embedded systems (e.g. checking of embedded systems in the recycling processes and machines) as well as

other technology like big data integrated sensors (e.g. checking sensors – collating data), predictive maintenance (e.g. ongoing evaluation of machine / system data to minimize down time), networked production systems (e.g. handling digital production systems), 4.0 technology skills and the use of digital models for the transfer of knowledge and information play a role in this profession.

Further training opportunities/courses: There are numerous further training opportunities in other areas or on technical content. Here are to be mentioned: 1. Waste Management Operations. 2. Goods and materials that are suitable for recycling. 3. Organisational procedures and specifications for recycling or disposal of goods and materials. 4. Sources of information on the status of different types of goods and materials. 5. Problem arising from recycling or disposal of goods and materials. 6. Roles and responsibilities of different co-workers. 7. Legal, safety and operating requirements relating to recycling or disposal of goods. 8. Sustainability, Maintenance and Preservation of the Environment. 9. Maintaining Sustainable Development and Environmental Good Practice at Work. 10. Waste Supervisory Management.

Alternative professions: Training professions/apprenticeships in the field of environmental conservation; Transportation operations and maintenance; Retailing and wholesaling; Warehouse and distribution; Managers in Distribution, Storage and Retail; General; Skilled Trades Occupations; Transport Drivers and Operatives; Elementary Goods Storage Occupations; Transport Associate Professionals.

Training abroad: Across EU and UK the sector is formulating to play an essential role over the next strategic period in delivering net zero, hence training in this sector is essential and available for all EU and UK workforces.

Further information:

www.skillsdevelopmentscotland.co.uk/media/40660/ma-framework-sustainable-resource-management-at-scqf-level-5.pdf

www.sqa.org.uk/sqa/65594.html

www.sqa.org.uk/sqa/65537.html

www.sqa.org.uk/sqa/65602.htmlwww.sqa.org.uk/sqa/65595.html

www.sqa.org.uk/sqa/14452.html

[SVQ Frontline Environmental Services at SCQF level 5 - GR8C 22 - SQA](#)

[Energy & Utilities Jobs - Energy & Utility Skills \(euskills.co.uk\)](#)

[Workforce Renewal and Skills Strategy 2020 - 2025: Response and Refresh - Energy & Utility Skills \(euskills.co.uk\)](#)

www.skillsdevelopmentscotland.co.uk/media/33317/facilities_management_l3_may_2015.pdf

Estate Worker

Short job description: It is recognised that Estate/Rural Operator work in a highly evolving sector and that technology is driving many advances (such as the use of monitoring many aspect of the profession which will involve energy consumption, and wireless control sensors for water systems, environmental conditions, etc.). Estate workers manage land and estates and maintain and manage the environment for the benefit of people and wildlife, involving the management of different habitats: woodland, grassland, wetland, heathland, and the maintenance of facilities for public access and recreation. To further work tasks belong:

The monitoring of health and safety in the rural sector, the development of good practices and awareness of the sector, promotion and responsibilities of outdoor areas, environmental conservation, estate management and managing public access. Including the survey and monitoring, reporting damage or obstructions on public walkways and developing improvements with local land owners. Because of so many kind of working tasks the Estate worker need to have a wide array of skills to keep also environmental machinery and equipment in good working condition; this will involve a planned maintenance along with repair and diagnostic work.

Typical industries and operational areas: Within the estate/rural sector across the EU the estate worker works in countryside management, landscaping, green-keeping, horticulture, agriculture, environmental conservation plus many more employment pathways. Changes in many Government and local policies, and changes in estate and rural land use have led to specific industries becoming critical to the sustainability of rural economies, conservation management being a major investment sector (this leading to larger businesses emerging across the sector. The Estate/Rural Worker is included within the animal care, land and water based industrial sector across the UK and EU and plays a very important role within the environmental sector. Workers can also include supplementary training within Fisheries Management, Forestry, Game-keeping and Wildlife management along with training in the Agricultural sector and use of equipment such as cultivators, forklift, dumpers, tractors and excavator training.

Type of training: This training is suitable for young learners who have just left school and offers a number of progression routes. The Estate Operator training in Scotland is embedded within the apprenticeship framework that is allocated to Department of Training and Employability, recognised through the Animal Care, Land and Water Based Sector, and dedicated to the rural industry. This training is included within the Rural Land use and Estate Management at EQF Level 4. Core employment may also include skills that require higher-level skilled staff member to meet demands of changing technology within estate/rural sector practices.

It is recognised that although the areas of work within estates/rural includes working with land and environmental management, they have different outcomes, which means that the process and equipment used can differ from one another. Therefore, training involves the having the knowledge to manage and develop estates and green spaces, and use this knowledge and skill gained through training to develop and deliver technical information on rural estates as necessary. Furthermore the trainees learn to use and to operate with small land and estate equipment and machinery such as cultivators, tractors, Chainsaws Brushwood Chippers, strimmer's and gain skills to work other practical equipment, and help create a safe working/living environment. Core skills such as problem solving, communication, time management, working with others and new META Skills are a pre-requirement within the sector and are a core part of the training.

Rural operations involve the understanding of environmental practices and policies that affect local land areas and provide the trainees the skills to identify where improvement could be made. Training covers activities in line with local environmental practices and encourages others to develop an environmental awareness of their surrounding areas.

This apprenticeship equips the trainees with the abilities required to work in the rural industrial sector and develop knowledge of the countryside, including Estate Management, Agriculture, Game-keeping and Wildlife Management or Trees and Timber (General Woodland and Forestry). The apprenticeship will focus skills in the rural industries and develop essential tools for future careers. And the training also includes the maintenance, servicing and repair of a full range of small plant machines, apparatuses and tools used in up-to-date estate operations on equipment.

Duration of the apprenticeship/training: 24 Months (EQF level 4).

Required previous education / school leaving certificate: There are no entry qualification requirements to apply for this apprenticeship pathway. However, it is recognised that employers are looking for a highly enthusiastic learner, and this is highly valued. It is also beneficial for the learner to show previous practical rural skill experience.

For entry into this estate/rural operator sector, it is recommended that trainees have a good school-leaving qualification. A good school leaving qualifications is a representative method of assessing the suitability of trainees. Nevertheless, it should be stressed that young people should not be discouraged from applying for an Apprenticeship because of a lack of formal learning qualifications.

Required school subjects, in which subjects potential trainees should perform well:
Mathematics, Technology, Computer science, Physics, National language, English, Science

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Willingness to contact, Empathy, Communication skills, Patience, Ability to deal with conflicts, Sense of order, Ability to make decisions, Independent working, Motivation

Required skills in order to practice the profession: Spatial thinking, Eye-hand-coordination, Technical understanding, Drawing skills, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Orientation sense, Logical thinking, Dexterity, Analytical skills, Text comprehension

Interests: Working with others, customer development, active social activities, digital technology, general mechanical engineering, rural/estate skills and the environment, technical skills, craft and technology, quality control, self-development, diligence, awareness, accuracy of planning and continuous development. Trainees should also have a keen interest in information and technology, be creative and inventive and a good technical mind. Outdoor work and working in small groups.

Trends:

As the skills of the Estate/Rural Operator continues to change rapidly, staff need to embrace and develop new digital employability skills and new technical skills to be able to meet future employer needs. Overall, this can affect individual employment and earning prospects, as well as their employer's productivity, competitiveness and meet further skills gaps and challenges. The sector also continues to recognise the major challenges regarding equal opportunities, diversity and gender balance within the industry and despite numerous high profile attempts to increase women participation such as the International Women in Engineering Day, women remain under-represented in Estate Operator roles.

The Estate/Rural Operator Apprenticeship programme continues to attract new entrants by providing a structured route to job competence and career progression. It also provides the pathway for employers to "grow their own" workforce where technically competent individuals are increasingly difficult to recruit. Within the apprenticeship framework for the Estate/Rural Operator sector the processes are becoming increasingly digitised and embedding new digitalised systems and the involvement of IT skills are becoming more important. Pathways of estate management has an increasing amount of new technology built into rural monitoring equipment and this is set to continually increase across the sector, through new equipment such as working with sensors and digitalised of estates equipment as prime examples.

Across the EU and UK, central Governments are making reforms; this includes the amendments to apprenticeships and policy. This includes the introduction of a more technical skill qualifications and an improved technical education at the higher national EQF level 5/6.

Digitisation issues (e.g. specifications on different technologies, know-how):

In the future, Estates Operators will continue to deal with new technologies that will change their field of work due to increasing digitisation meaning a greater influence of higher technical skills. This includes Using ICT devices, using digital services and applications, using different digital environments and applications in their work tasks. The use of Information and Communication Technology, Automate Processes will include monitoring apps and sensors for production processes, measuring points for equipment and embedded systems (e.g. checking of embedded systems in the Estates/Environmental/Rural Sector, including Electrical processes in equipment and machines). It will also involve the use of Cloud and Big Data integrated sensors (e.g. checking sensors – collating data), predictive maintenance (e.g. ongoing evaluation of machine / system data to minimise down time) networked production systems (e.g. handling digital production systems), 4.0 technology skills and the use of digital models for the transfer of knowledge and information.

Further training opportunities/courses/progression: On completion of this estates/rural training there are several pathways open to trainees who wishes to continue further training opportunities in order to progress their profession. There are various opportunities to continue to undertake further vocational training or academic trainings. These may include (but are not exclusive to) the following: 1. Environmental Management/Officer, 2. Estate Supervisor, 3. Qualifications in a related area, including Health and Safety, Training and Development, Business Improvement Techniques and Management, 4. Countryside management, 5. Estate maintenance, 6. Conservation Officer, 7. Land-based Engineering, 8. Trees and Timber.

Alternative professions: Further studying can lead to an Horticultural/Agricultural/Land-based Engineering degree in horticultural/agricultural science or estates management, or the apprenticeship may lead into other direct employment in the sector such Agriculture, horticulture and Animal Care; Arboriculture and forestry; Coppicing; Estate Worker; Ranger; Access Officers; Conservation Officer/Manager; Property Manager; Renewable Energy Worker.

Training abroad: Across EU and UK the sector is formulating to play an essential role over the next strategic period in delivering Estate/Rural Operator skills hence quality training in this sector is essential and available for all EU and UK workforces.

Further information:

[www.skillsdevelopmentscotland.co.uk/what-we-do/apprenticeships/modern-apprenticeships/modern-apprenticeship-frameworks/Animal Care, Land & Water Based | Skills Development Scotland](http://www.skillsdevelopmentscotland.co.uk/what-we-do/apprenticeships/modern-apprenticeships/modern-apprenticeship-frameworks/Animal_Care_Land_Water_Based_Skills_Development_Scotland)

[Qualifications Search - Find an SQA qualification - SQA](#)

[Develop an awareness of environmental good practice \(sqa.org.uk\)](http://www.sqa.org.uk)

www.sqa.org.uk/sqa/63888.html?sector=355

www.scotland.lantra.co.uk/careers/sector/336/environmental-conservation

[Careers - Scotland | Lantra - Scotland](#)

www.skillsdevelopmentscotland.co.uk/media/41065/ma-rural-skills-level-3.pdf

www.skillsdevelopmentscotland.co.uk/media/41065/ma-rural-skills-level-3.pdf

www.skillsdevelopmentscotland.co.uk/media/41064/ma-rural-skills-level-2.pdf

www.skillsdevelopmentscotland.co.uk/media/40660/ma-framework-sustainable-resource-management-at-scaf-level-5.pdf

5. Selected core training professions from the nursing-medical vocational field

The professional profiles described below were identified by the project partner from Spain (see detailed table above) and described with a focus on the Spanish VET system. In relation to the nursing-medical vocational field, professions from the field of nursing as well as from the field of therapy and medicine were identified that are affected by digitisation and may be known as training professions in other EU countries. In addition to well-known professions, some new professions in the field of nursing and medicine are also presented, which already exist in some EU countries, while in other EU countries they can be established as training professions in the future. With regard to the aspects of training duration, type of training and further training opportunities, the representations refer to Spain and may need to be adapted for other countries and their VET systems if necessary.

Assistant Pharmacy and Parapharmacy technician

Short job description: Assisting in dispensing and making pharmaceutical products and those specifically related to the same, and sell parapharmaceutical products, encouraging the promotion of health and carrying out administrative and stock control tasks, complying with the specifications of quality, safety and environmental protection.

Typical industries and operational areas: Pharmacies and parapharmacies. Pharmaceutical private sector.

Type of training: is a medium degree of vocational school.

Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Holding the Certificate in Compulsory Secondary Education or holding the corresponding access test, Bachelor, Technician (middle grade).

To be an assistant in Pharmacy and Parapharmacy is necessary to study Technician in Pharmacy and Parapharmacy. Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Credits ECTS. Content of the studies: Arrangement and Sale of Products, Pharmacy Management, Dispensing Pharmaceutical Products, Elementary Laboratory Operations, Magistral Formulation, Health Promotion, First Aid, Anatomophysiology and Basic Pathologies, Professional Training and Guidance, Business and Entrepreneurial Initiative, On the Job Training. TOTAL CREDITS 120 OFFICIAL DURATION (HOURS) 2000

The minimum teaching requirements comprise 55% official credit points valid throughout Spain. The remaining 45% corresponds to each Autonomous Community.

Required school subjects, in which subjects potential trainees should perform well:

Mathematics, Technology, Computer science, Biology, Chemistry, Economics, English, National Language, Science, (Anatomy lessons)

Required social competencies in order to practice the profession: Care, Prudence, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Empathy, Communication skills, Patience, Sense of order, Ability to make decisions, Assertiveness, Power of endurance, Independent working, Motivation, Sense of ethics, Secrecy

Additional competencies: Ability to transmit knowledge, Sensitivity of environmental

Required skills in order to practice the profession: Handicraft, Eye-hand-coordination, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Logical thinking, Dexterity, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends:

The trend is to have the profession increasingly digitized, expanding activities with the new digital tools that appear. Have a greater presence in social networks, and administrative knowledge.

Digitisation issues (e.g. specifications on different technologies, know-how):

This profession needs greater digitization to manage the treatment of electronic prescriptions, processing the invoicing of prescriptions through computer applications, use of networks to stay connected with other professionals in the pharmaceutical and health sector, bring the products closer to the client at home, and even have a greater presence of the business in networks, in mobile applications, web pages.

Further training opportunities/courses: In the field of health. Degree in Higher Technician. Further training in degrees relate to health professions and degrees related to health, like Pharmacy.

Alternative professions: You can work at Pharmacy technician, Assistant pharmacy technician, Medications warehouse technician, Hospital pharmacy technician, Parapharmacy establishment.

Training abroad: Spain and additional qualification “European assistant”, Portugal, United Kingdom, Germany, France, and Italy.

Further information:

<https://www.itep.es/blog/tecnico-farmacia-y-parafarmacia/tecnico-en-farmacia-y-parafarmacia-evolucion-de-la-profesion.htm>

<https://ratiopharm.es/en-la-botica/actualidad-farmaceutica/5-consejos-para-digitalizar-tu-carrera-farmaceutica>

<https://www.canarifarm.com/farmacia-digital-evolucion-en-los-ultimos-tiempos/>

<https://www.campus-training.info/funciones-tecnico-farmacia-parafarmacia/>

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/presencial/farmacia-parafarmacia/>

<https://www.cursosccc.com/blog/2020/04/funciones-y-tareas-de-un-tecnico-en-farmacia-y-parafarmacia/>

<https://www.todofp.es/que-estudiar/loe/sanidad/farmacia-parafarmacia.html>

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/presencial/cuidados-auxiliares-de-enfermeria/tecnico-de-grado-medio-en-farmacia-y-parafarmacia/>

Emergency health care technician

Short job description: A health emergency technician is a professional who provides basic health and psychological assistance in the pre-hospital, collaborates in emergency plans, predictable risk mechanisms and health care logistics in case of an individual or collective emergency or catastrophe. Performs support operations for the health team, preparation and administration of emergency medication, provides care to patients.

Typical industries and operational areas: nursing public and private companies, hospitals.

Type of training: is a medium degree of vocational school.

Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Holding the Certificate in Compulsory Secondary Education or holding the corresponding access test, Bachelor, Technician (middle grade).

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Computer science, Biology, Chemistry, Economics, English, National Language, Science, (Anatomy lessons)

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Sense of responsibility, Ability to work under pressure, Comprehension, Empathy, Communication skills, Patience, Ability to make decisions, Assertiveness, Power of endurance, Independent working, Motivation, Sense of ethics, Secrecy
Additional competencies: Ability to transmit knowledge, Sensitivity of environmental, mentally stable

Required skills in order to practice the profession: Handicraft, Eye-hand-coordination, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Logical thinking, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension, Health, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends:

Use of 5G technology for patient monitoring, prediction of diseases before they manifest using 5G technology and mobile networks. Use of drones in emergency situations for location, rescue, assistance.

Digitisation issues (e.g. specifications on different technologies, know-how):

The Internet of Things (IoT) can already be found at the service of these professionals, data processing allows systems to receive information to predict incidents and improve the response capacity of emergency teams, algorithms can process information from different sensors and detect abnormal situations. Social networks are important because they can help process large volumes of information. The use of drones is a great help in search, reconnaissance, rescue and direct assistance to citizens. 5G technology is a great improvement as it can remotely connect different teams of professionals in real time. The intelligent light is of great help to visualize situations and orders from other professionals. Augmented reality glasses allow you to receive the patient's medical data in real time. Artificial intelligence is of great help in detecting emergency situations.

Further training opportunities/courses: Expert in auxiliary nursery care, Telecare operator.

Alternative professions: Medical transport technician, Remote assistance operator, Operator of emergency coordination centres

Training abroad: Spain and additional qualification “European assistant”, United Kingdom, Germany, and Italy.

Further information:

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/presencial/emergencias-sanitarias/tecnico-de-grado-medio-en-emergencias-sanitarias/>

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/presencial/emergencias-sanitarias/tecnico-de-grado-medio-en-emergencias-sanitarias/>

<https://www.todofp.es/que-estudiar/oe/sanidad/emergencias-sanitarias.html>

<https://www.fp-santagema.es/que-sabe-hacer-exactamente-un-tecnico-de-emergencias-sanitarias/>

Nursing assistant (Expert in auxiliary nursery care)

Short job description: Providing auxiliary care to patients/clients and taking action on the health and hygiene condition of the patient's/client's environment as a member of a nursery team at specialized healthcare and primary-care centres under the management of a nursery diplomaed specialist, or, when appropriate, as a member of a healthcare team led by a self-employed medical practitioner, under appropriate supervision.

Typical industries and operational areas: His work is carried out in in public and private hospitals, ambulances, dental clinics, psychiatric clinics, red cross, health centers

Type of training: is a medium degree of vocational school.

Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Good secondary school leaving certificate, or Bachelor, Technician (middle grade).

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Computer science, Physics, Biology, Chemistry, Economics, English, National Language, Science, (Anatomy lessons)

To be a Expert in auxiliary nursery care is necessary to study Expert in auxiliary nursery care. Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Credits ECTS. In Spain at Secondary Education Centres or approved training centres, including training modules of a theoretical- practical nature and Training at Work. – Training at work- Occupational Training and guidance- Hygiene in a hospital environment and cleasing of material- Administrative operations and heath documentation- Promoting health and providing psychological support to patients- relationships within a work team- Basic nursery techniques- dental and stomatological support techniques.

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Ability to work under pressure, Creativity, Kindness, Comprehension, Willingness to contact, Empathy, Communication skills, Patience, Ability to make decisions, Mastery, Assertiveness, Power of endurance, Independent working, Motivation, Sense of ethics

Additional competencies: Ability to transmit knowledge, Sensitivity of environmental

Required skills in order to practice the profession: Handicraft, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Logical thinking, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension, Health, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends: Health trends are in the direction of taking advantage of technological innovations to achieve better communication between professionals and patients and to be able to work with new models for the detection of diseases. Virtual attention and remote work, data analytics, and online assistance are outstanding trends in this profession. Possibility of practicing with virtual reality. Big data techniques to cross-reference patient information to learn about medical tests to create new predictive models, biometric information from smart watches, use of smart devices.

Digitisation issues (e.g. specifications on different technologies, know-how):

Digitization has brought about a very important change in the profession. The new wearable tools, the cloud, augmented reality, portable technologies, IoT devices, as well as mobile applications will be of great help in health, allowing greater communication between patients and health professionals and greater control and monitoring of variables to measure the patient's health and access to more information. Simulated environments have been an advance in the training of these professionals and have led to a great improvement in communication between health professionals. Artificial intelligence and data analytics involve crossing clinical information from thousands of patients, videoconferences will be new tools in primary care.

Further training opportunities/courses: In the field of health. Degree in Higher Technician. Further training in degrees relate to health professions and degrees related to health.

Alternative professions: Nursing / clinic assistant. Spa assistant. Primary care assistant. Home nursery caregiver. Dental care assistant. Geriatrics assistant. Paediatrics assistant. Sterilization assistant. Special units assistant. Mental health assistant.

Training abroad: Spain (middle degree) and additional qualification "European assistant", Portugal, United Kingdom, Germany, France, and Italy.

Further information:

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/presencial/cuidados-auxiliares-de-enfermeria/>

<https://www.unav.edu/web/grado-en-enfermeria>

<https://www.unavarra.es/sites/grados/salud/enfermeria/presentacion.html>

<http://cipelizondoiiip.educacion.navarra.es/zehaztapenaehzerizaintzagazt.pdf>

<https://www.salusplay.com/blog/tendencias-tecnologicas-sector-salud-2020/>

<https://asistenciasanitaria.com.ar/2021/01/23/salud-digital-y-las-tendencias-para-2021/>

<https://www.dispositivoswearables.net/>

<https://www.todofp.es/dam/jcr:af5b68fd-e75c-493b-94ff-0565d3886473/san21cuidauxilenfermeria-pdf.pdf>

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/presencial/cuidados-auxiliares-de-enfermeria/tecnico-de-grado-medio-en-cuidados-auxiliares-de-enfermeria/>

Home care assistant

Short job description: Assisting people in need of care, both at home and at the institutional level, in order to keep and improve their quality of life, performing caring, non-health, psychosocial and home management support activities, applying prevention and safety measures and regulations, and referring them to other services when necessary.

Typical industries and operational areas: Their work is carried out in the dependent 's adress, in residences for the elderly and people with disabilities, sheltered apartments, psychiatric care centers.

Type of training: is a middle degree of vocational school.

Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Holding the Certificate in Compulsory Secondary Education or holding the corresponding access test, Bachelor, Technician (middle grade), be in possession of a level 1 certificate of professionalism from the same family and professional area, the University entrance exam (PAU) card.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, technology, Computer Science, Economics, English, National Language, Science, (Anatomy lessons). To be a Help and home assistant is necessary to study Technician in Assistance to People in Need of Care. Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Organisation of the Assistance for People in Need of Care, Social Skills, Characteristics and Demands of People in Need of Care, Psychosocial Assistance and Support, Communication Support , Home Support , Healthcare, Hygiene Assistance, Telecare, First Aid, Professional Training and Guidance, Business and Entrepreneurial Initiative, On the Job Training

Required social competencies in order to practice the profession: Care, Prudence, Team skills, Sense of responsibility, Ability to work under pressure, Creativity, Kindness, Comprehension, Willingness to contact, Empathy, Communication skills, Patience, Ability to deal with conflicts, Sense of order, Mastery, Ability to make decisions, Assertiveness, Power of endurance, Independent working, Motivation, Sense of ethics, Secrecy

Required skills in order to practice the profession: Handicraft, Eye-hand-coordination, Body control, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Logical thinking, Dexterity, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension, Health, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends: Trends in this profession are directly related to technology. Real-time connectivity, monitoring and technological support, a robot that performs some of the care services, smart homes with sensors in the rooms.

Digitisation issues (e.g. specifications on different technologies, know-how):

ICTs have acquired importance as a source of consultation, follow-up, monitoring of constants, life habits, adherence to treatments. Mobile applications allow users to know medical information and also allows sharing information with doctors and health professionals from anywhere.

Further training opportunities/courses: Professional specialization courses. another Vocational Training cycle with the possibility of establishing validation of professional modules in accordance with current regulations. Higher degree in social integration, Degree in social work. The Baccalaureate in any of its modalities.

Alternative professions: Career of people in need of care in different institutions and/or at their homes, Career at mental health care institutions, Geriatric assistant, Manager and deputy manager of institutions providing services to people in need of care, Assistant responsible for the plant at rest homes for elderly people and people with disabilities, Home care assistant, Family workers, Special education Assistant, Personal assistant, Telecare operator.

Training abroad: Spain and additional qualification "European assistant", Portugal, Nordic countries, France, and Italy.

Further information:

<https://www.todofp.es/dam/jcr:dc427588-9ce7-4c01-bead-1ff02341afe6/n-tatencionpersonasdependenciaes-pdf.pdf>

<https://escuelaeducadores.educacion.navarra.es/oferta-formativa-de-formacion-profesional/>

<https://escuelaeducadores.educacion.navarra.es/wp-content/uploads/2021/05/APSD-Castellano.pdf>

<https://www.educaweb.com/profesion/asistente-atencion-domiciliaria-123/>

Hospital porter

Short job description: A Hospital porter is a person who helps health people, accommodates patients, mobilizes them, reports damage, performs surveillance work, transfers objects and documents, and provides guard services.

Typical industries and operational areas: Hospitals

Type of training: In Spain the type of training is Professional qualification "transfer and mobilization of users and/or patients, documentation and materials in health centers" and there is also the training of Assistant Health Hospital porter for students with Special Educational Needs.

Duration of the apprenticeship/training: Vocational training is 4000 hours in 4 courses. The accreditation of professional competence does not have a specific duration; it is a process of evaluation and advice.

Required previous education / school leaving certificate: good secondary school leaving certificate.

Required school subjects, in which subjects potential trainees should perform well:

Mathematics, Technology, Crafts lessons, Technical handicraft lessons, National language, English, Science.

To be an assistant in Hospital Porter is necessary to study a professional qualification "transfer and mobilization of users and/or patients, documentation and materials in health centers" or Assistant Health Hospital porter for students with Special Educational Needs.

Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Credits ECTS.

Assignment and transfer of documents, materials and equipment within the health and communication of information. Mobilization, transfer and placement of patients, deaths, amputations and fetuses in the hospitalization units of a health center. Mobilization, transfer and placement of patients in special services of a health center. Set-up of rooms and common areas in accommodation. Laundry and linen maintenance in the accommodation. Formation in work centers. New technologies. Personal autonomy and job orientation.

Required social competencies in order to practice the profession: Care, Prudence, Team skills, Flexibility, Sense of responsibility, Ability to work under pressure, Creativity, Kindness, Comprehension, Willingness to contact, Empathy, Communication skills, Patience, Ability to deal with conflicts, Sense of order, Mastery, Ability to make decisions, Assertiveness, Independent working, Motivation, Sense of ethics. Additional competencies: Ability to transmit knowledge, Sensitivity of environmental

Required skills in order to practice the profession: Handicraft, Eye-hand-coordination, Body control, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Dexterity, Retentivity, Text comprehension, Linguistic comprehension, Health, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends:

The trends are in line with the advances in digital technology in computers, phones and tablets.

Digitisation issues (e.g. specifications on different technologies, know-how):

Digitisation has made it possible for guards to access different digital tools, such as a computer, tablet, mobile phone, facilitating work and contributing to better management of the work center. It has meant a change from paper and the landline phone for more useful digital tools to help at work. We are talking about basic digital tools but they have contributed to a better organization of work and facilitated its execution.

Further training opportunities/courses: Expert in auxiliary nursery care.

Alternative professions: Professional support in working with physically or mentally handicapped people.

Training abroad: Spain, United Kingdom,

Further information:

<https://fpciclosformativos.com/c-ciclo-formativo-auxiliar-de-celador-sanitario>

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/programa-de-cualificacion-profesional-inicial-especial/>

https://incual.educacion.gob.es/web/extranet/cualificacion?p_p_id=101_INSTANCE_1EKAm_eDTJhPj&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column-1&p_p_col_pos=1&p_p_col_count=2&_101_INSTANCE_1EKAm_eDTJhPj_struts_action=%2Fasset_publisher%2Fview&_101_INSTANCE_1EKAm_eDTJhPj_redirect=%2Fweb%2Fextranet%2Fsanidad_cualificaciones&_101_INSTANCE_1EKAm_eDTJhPj_type=content&_101_INSTANCE_1EKAm_eDTJhPj_assetEntryId=8808803

Physiotherapist

Short job description: Physiotherapists try to solve physical problems derived from injuries, illnesses, aging to relieve pain and restore function or reduce the effects of any dysfunction, improving the quality of life of people by applying rehabilitation techniques. Physiotherapy is aimed at providing a better quality of life by stimulating the patient's abilities, greater autonomy in activities of daily living, achieving greater independence and achieving recovery from injuries.

Typical industries and operational areas: This profession has a wide field where it can be applied, health, medical centers, physiotherapy centers, rehabilitation centers.

Type of training: To train in physiotherapy in Spain, you must complete a degree at the University. In other countries like Germany e.g. it is more of a vocational training.

Duration of the apprenticeship/training: The duration of the degree is 4 courses, 240 credits.

Required previous education / school leaving certificate: Baccalaureate (Health Sciences or Sciences and Engineering and Technology) or higher level training cycles in the areas of Health Sciences.

Required school subjects, in which subjects potential trainees should perform well:

Mathematics, Technology, Crafts lessons, Computer science, Physics, Biology, English, National Language, Sports, Science

To be a physiotherapist is necessary to study a degree at the university in Spain. In Germany is a vocational training. Course structure of the official degree. Subjects:

Biochemistry-Physiotherapy, Physiology, Functional anatomy of the locomotor system, General and behavioral psychology, Fundamentals of physiotherapy, Anatomy of organs and systems, Kinesiology and Biomechanics of movement, Pathology, General physiotherapy procedures, Assessment in Physiotherapy, Pathology, Physiology of effort, Physical exercise and health, Kinesiotherapy, Functional neuroanatomy, Statistics applied to health sciences-physiotherapy, Pharmacology, Professional communication in the health field, Musculoskeletal physiotherapy, Neurological physiotherapy, Cardiorespiratory physiotherapy, Fasciomioneural techniques, Structural manual therapy, Therapy craniomandibular and visceral physiotherapy, urogynecological physiotherapy, geriatric, pediatric and sports physiotherapy, data sources and development of projects in the health field, public legislation and administration, introduction to the scientific method, final degree project.

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Kindness, Comprehension, Willingness to contact, Empathy, Communication skills, Patience, Ability to deal with conflicts, Sense of order, Ability to make decisions, Assertiveness, Independent working, Motivation, Sense of ethics
Additional competencies: Ability to transmit knowledge, Sensitivity of environmental

Required skills in order to practice the profession: Handicraft, Eye-hand-coordination, Body control, Craft skills, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Logical thinking, Dexterity, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends: The trends in physiotherapy are in the sense that in physiotherapy treatments it is not necessary for the professional to be present or for the patient to travel to the rehabilitation center, and it can be carried out remotely with technological means. It is possible to offer more complete services and reach all types of patients. Resources are created so that patients can continue with their rehabilitation exercises from home and professionals can follow their progress remotely. Teletherapy is possible, as well as the use of mobile applications to carry out and monitor rehabilitation activities.

Digitisation issues (e.g. specifications on different technologies, know-how):

In physiotherapy they can be used as mobile phones, computers, tablets, alarms, cameras, recorders (in certain situations), game consoles with certain video games to stimulate abilities, apps, web platforms, virtual reality glasses, virtual reality simulated by computer, augmented reality .

Further training opportunities/courses: The profession can be complemented by completing a master's and postgraduate degree related to health careers, and a master's degree in neurorehabilitation.

Alternative professions: Professor, sports physiotherapist, health physiotherapist, geriatric physiotherapist, researcher of new methods in physiotherapy, physiotherapy in prevention.

Training abroad: United Kingdom, Lithuania, Czech Republic, Hungary, Turkey, Germany, Switzerland, Norway, Greece, France, Spain, Portugal, Italy, and Belgium.

Further information:

<http://www.unavarra.es/sites/grados/salud/fisioterapia/plan-de-estudios.html#cCentralUPNA>

<https://holahorro.mx/blog/nuevas-tendencias-digitales-para-hacer-fisioterapia/>

<https://www.efisioterapia.net/tienda/magnetoterapia.php>

<https://www.fisioexpress.com/que-hacen-los-fisioterapeutas/>

https://www.isep.es/curso/master-neurorehabilitacion/?utm_medium=cpc&utm_source=google.es&utm_campaign=1846520353&utm_adgroup=69677156357&qclid=EAlaIqobChMlt7nC5ubI9AIV1uF3Ch0VZg9DEAAYA SAAEgJ9pvD_BwE

<https://www.educaweb.com/cursos-de/rehabilitacion-neurologica/>

<https://www.eug.es/estudios/master-universitario-en-avances-en-neurorrehabilitacion-de-las-funciones-comunicativas-y-motoras/>

https://online.universidadeuropea.com/landing-master-universitario-fisioterapia-deportiva-semipresencial/?utm_source=google&utm_medium=paidsearch&utm_campaign=GADS_UE_O_ONL_POS_ES_RM_EMP_MU_GENERICO_ESP_SRCH.&utm_term=maestria%20fisioterapia%20deportiva&utm_content=always_on&uecrm=7011v0000016zJtAAI&qclid=EAlaIqobChMI2qLLxaXe9QIVWRPUAR2w4QfDEAAYASAAEgL_Y_D_BwE&qclsrc=aw.ds

https://www.formacionalcala.es/fisioterapia/masters-online?qclid=EAlaIqobChMItnD5aXe9QIVPoODbx3MQQQDEAAYAIAAEgJfD_D_BwE

Telecare operator

Short job description: The telecare operator is the professional who provides permanent and immediate help to people who need it, mainly dependent people, responding to emergency or needy situations, improving the quality of life of users by making them feel safe and supported and facilitating contact between the environment and the user.

Typical industries and operational areas: Mainly in the field of nursing. Their work is carried out in the dependents, or disabilities home, sheltered apartments, nursing home, psychiatric care centers via telecare.

Type of training: Telecare operator is a middle degree of vocational school.

Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Good secondary school leaving certificate or holding the corresponding access test, Bachelor, Technician (middle grade), be in possession of a level 1 certificate of professionalism from the same family and professional area, the University entrance exam (PAU) card.

Required school subjects, in which subjects potential trainees should perform well:

Mathematics, Technology, Computer science, Economics, English, National Language, Science, (Anatomy lessons)

To be a Telecare operator is necessary to study Technician in Assistance to People in Need of Care. Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Subjects:

Organisation of the Assistance for People in Need of Care, Social Skills, Characteristics and Demands of People in Need of Care, Psychosocial Assistance and Support, Communication Support, Home Support, Healthcare, Hygiene Assistance, Telecare, First Aid, Professional Training and Guidance, Business and Entrepreneurial Initiative, On the Job Training”

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Ability to work under pressure, Creativity, Kindness, Comprehension, Willingness to contact, Communication skills, Negotiation skills, Patience, Ability to deal with conflicts, Sense of order, Mastery, Ability to make decisions, Assertiveness, Power of endurance, Independent working, Motivation, Sense of ethics, Secrecy. Additional competencies: Ability to transmit knowledge, Sensitivity of environmental

Required skills in order to practice the profession: Spatial thinking, Eye-hand-coordination, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Orientation sense, Logical thinking, Dexterity, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.
Trends: The aging of the population, the reduction in the size of families, physical distancing from the family due to mobility and the new needs for technological means implies a greater demand for professionals to care for dependency, as well as the use of new technologies, like cloud and GPS.

Digitisation issues (e.g. specifications on different technologies, know-how):

You can work with servers in the cloud, VoIP connections (telephone service in the cloud), with basic lines (digital networks, mobile links). In this way, it is not necessary to have a fixed line to connect with the clerk, the service being accessible in any case. The mobile phone and the apps have been a very important advance, being able to be used in any mobile terminal and depending on the services offered by the clerk, they decide which services they want to activate, putting technology at the service of people and expanding the group of clerks. In this way, complementary technological support can be offered both inside and outside the home.

Nursing homes for the elderly are increasingly digitized to improve the communication system between patients and assistants, to warn in case of user problems, their location, the same happens in the homes of dependents. Telecare is a resource widely used with dependents. Mobile technology has been a great advance with the dependency, sometimes it is necessary for the technician to help with the management of digital and technical tools. New advances with digitization favor help to the dependent. The companies ISECO and TELEVÉS have carried out a project in the residences for the elderly in Galicia, through which the communication system between patients and attendants is improved by means of devices located in the user's rooms where tasks will be recorded and data of importance for the assistance. The system has a multiparametric monitor that captures medical information from the center resident and incorporates it in real time, and without human intervention, into the residence's computer system. In this way, it will be accessible from anywhere in the center, also saving the time necessary to archive the information according to the traditional method. This project in the near future could be applied to certain homes.

Further training opportunities/courses: Professional specialization courses, Another Vocational Training cycle with the possibility of establishing validation of professional modules in accordance with current regulations, The Baccalaureate in any of its modalities

Alternative professions: Carer of people in need of care in different institutions and/or at their homes, Carer at mental health care institutions, Geriatric assistant, Manager and deputy manager of institutions providing services to people in need of care, Assistant responsible for the plant at rest homes for elderly people and people with disabilities, Help at home assistant, Home care assistant, Family workers, Special education Assistant, Personal assistant

Training abroad: Spain and additional qualification "European assistant", Portugal, Nordic countries, France, and Italy.

Further information:

<https://escuelaeducadores.educacion.navarra.es/oferta-formativa-de-formacion-profesional/grado-medio-atencion-a-personas-en-situacion-de-dependencia/presentacion/>
<https://www.boe.es/buscar/act.php?id=BOE-A-2006-21990>
<https://www.todofp.es/que-como-y-donde-estudiar/que-estudiar/loe/servicios-socioculturales-comunidad/atencion-personas-situacion-dependencia.html#duracion>
<https://www.educaweb.com/estudio/titulacion-tecnico-atencion-personas-situacion-dependencia/>
<https://cuidadores.unir.net/formacion/certificados-de-profesionalidad/1011-gestion-de-llamadas-de-teleasistencia>
<https://www.audiolis.com/cursos-de-formacion/certificados-de-profesionalidad-acreditados/certificado-de-profesionalidad-gestion-de-llamadas-de-teleasistencia.html>
<https://sede.sepe.gob.es/especialidadesformativas/RXBuscadorEFRED/DetalleEspecialidadFormativa.do?codEspecialidad=SSCG0111>

X-Ray Technician

Short job description: A X-Ray technician is a person who obtaining graphic, morphological or functional records of the human body, with diagnosis and therapeutically purposes, from medical prescription, using equipment for diagnostic imaging and nuclear medicine, and attending patients during their stay in the unit, applying protocols of radioprotection and quality assurance, as well as those protocols established in the health care unit. He uses X-ray, nuclear medicine and MRI equipment and interprets the results.

Typical industries and operational areas: His work is carried out in the health area in health centers and hospitals.

Type of training: Higher diagnostic imaging and nuclear medicine training is a higher degree of vocational school.

Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Holding the Certificate in Post-Compulsory Secondary Education (Bachelor) or holding the corresponding access test. Bachelor, Technician (middle grade).

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Computer science, Physics, Biology, English, National Language, Science, (Anatomy lessons)
To be a Ray X technician is necessary to study Higher Technician in Diagnostic Imaging and Nuclear Medicine. Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Credits ECTS.
Patient Care. Physical Foundations and Equipment, Anatomy through Images, Radiation Protection, Simple Radiology Techniques, Special Radiology Techniques, Techniques for Computed Tomography and Echography, Techniques for Magnetic Resonance Imaging, Imaging Techniques in Nuclear Medicine, Radiopharmacy Techniques, Project on Diagnostic Imaging and Nuclear Medicine, Vocational Training and Guidance, Business and Entrepreneurial Initiative, On the Job Training.

Required social competencies in order to practice the profession: Care, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Empathy, Communication skills, Patience, Sense of order, Assertiveness, Independent working, Motivation, Sense of ethics, Secrecy
Additional competencies: Ability to transmit knowledge, Sensitivity of environmental

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Logical thinking, Dexterity, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends: New uses of x-rays are emerging, such as in food, to guarantee the quality and safety of packaged and bulk food products. Application in portable equipment and in telemedicine. New advances in technology, such as nanotechnology, have managed to improve the applications of portable digital equipment. It has also been applied in other sectors than healthcare: security to detect foreign objects, genetics to see inside cells, astronomy improving the vision of telescopes, environment to see soil and water contamination, armed to incorporate it into the kit to see through walls and assist the military, in palaeontology to analyze the content of particles in fossils, archeology to discover hidden texts, feeding to discover hidden and dangerous elements for health, agriculture to get more nutritious crops and analyze crop varieties

Digitisation issues (e.g. specifications on different technologies, know-how):

A Ray-X technician use computed tomography , a scan to create multiple cross- sectional images of the body, in the form of slices which together provide a complete image in 3D. The computer and the mobile are very important to see the images, understand, and interpret it. The technician can see the images anywhere, it's no necessary to stay in the job.

Further training opportunities/courses: In the field of health this profession is relate to radiology and nuclear medicine. Degree in Higher Technician in Diagnostic Imaging and Nuclear Medicine. Further training in degrees relate to health professions.

Alternative professions: You can work in other sectors that are not health and require X-ray imaging, such as food to discover hidden elements that can harm consumers, agriculture, security (see what is inside packages, suitcases etc, in astronomy to improve the telescopes view of galaxies.

Training abroad: Spain and additional qualification "European assistant", Portugal, United Kindong, Ireland, Germany, France, and Italy.

Further information:

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/ciclos-formativos-de-grado-superior/imagen-para-el-diagnostico-y-medicina-nuclear/>

<https://www.ilerna.es/es/tecnico-superior-en-imagen-para-el-diagnostico-y-medicina-nuclear-a-distancia-400>

<https://www.fpclaudiogaleno.es/blog/tecnico-de-rayos/>

<https://www.educaweb.com/profesion/tecnico-radiologia-diagnostico-544/>

<https://www.todofp.es/que-estudiar/loe/sanidad/imagen-diagnostico-medicina-nuclear.html#salidas>

Dental hygienist

Short job description: It is a profession that promoting dental and oral health of people and the community, by means of the development of preventive and technical care activities that include examination, assessment, promotion and execution of dentistry techniques, in cooperation with the odontologist or stomatologist. The function of educating patients on hygiene and eating habits to prevent oral problems, and of sterilizing the instruments used by dentists in their consultations and the disinfection of the consultation.

Typical industries and operational areas: His work is carried out in public and private health, dental consultations, dental clinics.

Type of training: Higher Technician in Dental and Oral Hygiene is a higher degree of vocational school.

Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Holding the Certificate in Post-Compulsory Secondary Education (Bachelor) or holding the corresponding certificate of the entry examination. Technician (middle grade), the University entrance exam (PAU) card, a University degree.

Required school subjects, in which subjects potential trainees should perform well: Technology, Computer science, Biology, English, National Language, Science, (Anatomy lessons)

To be a Dental Higienist is necessary to study Higher Technician in Dental and Oral Hygiene. Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Credits ECTS.

Reception and Logistics in a Dental Clinic. Study of the Oral Cavity. Examination of the Oral Cavity. Dental and Oral Intervention. Epidemiology in Oral Health. Education for Oral Health. Conservative Treatments, Periodontics, Surgery and Implants. Prosthesis and Orthodontics. First Aid. General Pathophysiology. Project on Dental and Oral Hygiene. Professional Training and Guidance. Business and Entrepreneurial Initiative. On the Job Training.

Required social competencies in order to practice the profession: Care, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Kindness, Willingness to contact, Empathy, Communication skills, Patience, Ability to make decisions, Independent working, Motivation, Sense of ethics, Secrecy

Additional competencies: Ability to transmit knowledge, Sensitivity of environmental

Required skills in order to practice the profession: Handicraft, Eye-hand-coordination, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Capacity of reaction, Dexterity, Linguistic thinking, Analytical skills, Text comprehension, Linguistic comprehension, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends:

Technology and the crisis created by the covid 19 pandemic have led dental clinics to adapt their facilities and their work methodology to new prevention and hygiene needs. Design in clinics plays a very important role in providing patient safety. The personal presentation of the hygienist before going to the dentist causes an acceptance and prestige of the professional, relaxed poster in the wall, television for entertainment.

It can be said that it is a profession for the future, people are increasingly aware of having good oral health, which psychologically influences people in a positive way. With the incorporation of new technologies and a greater need for diagnosis, a greater number of professionals will be needed. Oral hygiene tends towards esthetic treatments.

Digitisation issues (e.g. specifications on different technologies, know-how):

Digitization is increasingly being introduced into oral hygiene with innovations for improved service and better treatments for patients. 3D printing and modeling has revolutionized the industry. Digitization has led to video consultations when it is not necessary for the patient to be present. It has also led to improvements in the management and administration of the consultation. Artificial intelligence means better data processing, which allows improvements in decision-making when applying treatments, and predicting final results in treatments.

Further training opportunities/courses: In the field of health. Degree in Higher Technician in Dental and Oral Hygiene. Further training in degrees relate to health professions and degrees related to health, like Dentist, stomatologist.

Alternative professions: You can work at Clinic administration, Oral Clinic Patient Data Analyst.

Training abroad: Spain and additional qualification “European assistant”, Portugal, United Kingdom, Ireland, Germany, France, and Italy.

Further information:

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/>

<https://www.unavarra.es/fac-cienciasdelasalud/>

<https://www.todofp.es/dam/jcr:7a7921d0-0d6c-4011-9645-c757450791fe/n-tshigienebuodentalen-pdf.pdf>

Worker specialized in social inclusion

Short job description: The worker specialized in social inclusion is a professional who programming, organizing, implementing and assessing the interventions for social integration, applying strategies and specific techniques, fostering equality of opportunities, always working with an attitude of respect for those people benefitting from his/her work and guaranteeing the creation of safety environments for both, for the people benefitting from the work and for the professional.

Typical industries and operational areas: Nursing homes, Day centers, Schools, Residences for the disabled (physical and mental), Shelter centers for marginalized people, Immigrant reception centers, Shelter centers for minors, Home help, Social services centers.

Type of training: Worker specialized in social inclusion is a higher degree of vocational school.

Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Holding the Certificate in Post-Compulsory Secondary Education (Bachelor) or holding the corresponding access test. Technician (middle grade), the University entrance exam (PAU) card, a University degree.

Required school subjects, in which subjects potential trainees should perform well:

Mathematics, Computer science, Technical handicraft lessons, Economics, English, National Language, Science, Sport

To be a Worker specialized in social inclusion is necessary to study Higher Technician in Social Integration. Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Credits ECTS.

Context of the Social Intervention. Social and Labour Intervention. Cohabitation Units Care. Community Mediation. Support to the Education Intervention. Promotion of Personal Autonomy. Augmentative and Alternative Communication Systems. Methodology of Social Intervention. First Aid. Social Skills. Project on Social Integration. Professional Training and Guidance. Business and Entrepreneurial Initiative. On the Job Training.

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Kindness, Comprehension, Willingness to contact, Empathy, Communication skills, Patience, Ability to deal with conflicts, Mastery, Ability to make decisions, Independent working, Motivation

Additional competencies: Ability to transmit knowledge, Sensitivity of environmental

Required skills in order to practice the profession: Eye-hand-coordination, Power of observation, Organisational talent, Math understanding, Concentration, Logical thinking, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension, Clinical skills. Additional competencies: Mediator skills, Intercultural skills, Educational skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends:

Trends are aimed at using technology and digitization to eliminate barriers and difficulties for people. That thecnology promote digitization to all groups, promoting the performance the job in other different areas, for example in towns. Promote the digital inclusion of all groups. Foment the connection between people from all over the world. Reduce inequalities from any cause. Using the mobile as an aid in visual disabilities, voice assistants help facilitate mobility for people with visual disabilities and help dependent people remembering tasks, start the necessary tools that made easy the daily life, facilitate the contact of the dependent with technologies. Tablets, data glasses improve the quality of life of disabled people.

Digitisation issues (e.g. specifications on different technologies, know-how):

Digitisation is increasingly important in this profession, allowing for greater social inclusion and integration. The computer media have incorporated resources that allow a blind person to write dictating to the computer, as well as to read, watch a movie with audio description, move down the street with a mobile phone without the need to be assisted by a person. Sensors in different media used by the dependents connected to the mobile.

Further training opportunities/courses: In the field of nursing this profession is relate to social integration, Higher Technician in Social Integration. Further training in degrees relate to nursing and health professions.

Alternative professions: Technician in programmes of prevention and social insertion, Educator of residential equipment of different nature, Educator of disabled persons, Family worker, Family educator, Guardianship assistant, Monitor in open centres, Technician in social integration, Specialist in educational support, Educator of special education, Educational technician, Qualified technician I (Worker specialized in social inclusion),

Qualified technician II (Educational), Instructor of disabled persons, Basic mobility instructor Workforce integration technician, Labour mediator, Labour invigorator, Base educator, Community mediator, Intercultural mediator, Neighbourhood and community mediator, Job coach, Social rehabilitation instructor.

Training abroad: Spain and additional qualification “European assistant”, France, Italian, Germany, United Kingdom.

Further information:

<https://www.todofp.es/dam/jcr:2328c989-60fd-4372-9c58-9bd735c4c321/n-tsintegracionsocialen-pdf.pdf>

<https://www.educaweb.com/estudio/titulacion-tecnico-superior-integracion-social/>

<https://escuelaeducadores.educacion.navarra.es/wp-content/uploads/2021/05/Integraci%C3%B3n-Social-Castellano.pdf>

Technician in health documentation and management

Short job description: a Health documentation and management technician is a person who defining and organising methods of information processing and clinical documentation, extracting, recording and encoding data, and validating information, ensuring regulatory compliance; as well as participating in processes of patient service and management and administrative management in health centres.

Typical industries and operational areas: This professional can work in hospitals, clinics or other health centers and institutions, in health centers, assistant to biomedical research teams, secretary of health services, in different areas: design, quality control, process management.

Type of training: Health documentation and management technician is a higher degree of vocational school.

Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Holding the Certificate in Post-Compulsory Secondary Education (Bachelor) or holding the corresponding access test. Technician (middle grade), the University entrance exam (PAU) card, a University degree.

Required school subjects, in which subjects potential trainees should perform well:

Mathematics, Technology, Computer science, Economics, English, National Language, Science

To be a Health documentation and management technician is necessary to study Higher Technician in Health Documentation and Management. Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Credits ECTS.

Patient management, Clinical terminology and pathology, Extraction of diagnoses and procedures, Health records and documentation, Health information and medical classification systems, Office IT and information processing, Medical codification, Psychosocial assistance for patients/users, Data validation and use, Health administrative management, Project on health documentation and management, Professional Training and Guidance, Business and Entrepreneurial Initiative, On the Job Training.

Required social competencies in order to practice the profession: Care, Prudence, Flexibility, Team skills, Willingness to learn, Sense of responsibility, Comprehension, Communication skills, Patience, Ability to deal with conflicts, Sense of order, Ability to make decisions, Independent working, Motivation, Secrecy. Additional competencies: Ability to transmit knowledge

Required skills in order to practice the profession: Handicraft, Eye-hand-coordination, Technical understanding, Organisational talent, Math understanding, Concentration, Logical thinking, Dexterity, Linguistic thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends:

Trends go in the direction to use different digital tools and keep up to date with the changes that are taking place with advances in digitization and technology.

Digitisation issues (e.g. specifications on different technologies, know-how):

Digitization has greatly influenced in this activity, using a computer, tablet to handle a large amount of information in anywhere.

Further training opportunities/courses: Professional specialization courses, another Vocational Training Cycle with the possibility of establishing validations of professional modules in accordance with current regulations, preparation of the Baccalaureate Evaluation Tests (only the core subjects), University Education with the possibility of establishing validations in accordance with current regulations

Alternative professions: Biomedical research, documentary design, secretary of documentation services.

Training abroad: Spain and additional qualification “European assistant”.

Further information:

<https://www.todofp.es/dam/jcr:af43a99c-b66c-4472-bd36-ce3c06dca007/n-tsdocuadminsananen-pdf.pdf>

<https://www.lasallecentrouniversitario.es/ciclos-formativos/tecnico-superior-en-documentacion-sanitaria/>

<https://www.educaweb.com/estudio/titulacion-tecnico-superior-documentacion-administracion-sanitarias/>

Technician for auditory prosthetic

Short job description: A technician in prosthetic audiology is a person who select and adapt audio prostheses giving an audiological assessment, carrying out the monitoring of users and the maintenance of prostheses, as well as determining acoustic protection measures from the assessment of sound levels.

Typical industries and operational areas: His work is carried out in audio prosthetic cabinets, within the prosthetic audiology sector, mostly in special shops. But also at industrial manufacturers.

Type of training: Technician in Prosthetic Audiology is a higher degree of vocational school.
Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Holding the Certificate in Post-Compulsory Secondary Education (Bachelor) or holding the corresponding certificate of the entry examination. Technician (middle grade), the University entrance exam (PAU) card, a University degree.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Technical handicraft lessons, Computer science, Physics, Biology, Economics, English, National Language, Science, (Anatomy lessons)
To be a Technician in Prosthetic audiology is necessary to study Higher Technician in Prosthetic Audiology. Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Credits ECTS.

Anatomic and Sensory Hearing Characteristics, Electronic Technology for Audio prostheses, Acoustics and Elements of Sound Protection, Mould making and Hearing Protection Devices, Selection and Adaptation of Audio Prostheses, Hypo-acoustic Patients Care, Hearing and Verbal Communication, Project on Prosthetic Audiology, Professional Training and Guidance, Business and Entrepreneurial Initiative, On the Job Training.

Required social competencies in order to practice the profession: Care, Flexibility, Customer orientation, Willingness to learn, Sense of responsibility, Kindness, Comprehension, Willingness to contacts, Empathy, Communication skills, Patience, Ability, Independent working, Motivation, Sense of ethics
Additional competencies: Ability to transmit knowledge, Sensitivity of environmental

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Power of observation, Math understanding, Concentration, commercial skills, Logical thinking, Dexterity, Linguistic thinking, Retentivity, Text comprehension, Linguistic comprehension, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends:

The trend is to have more and more digitization, in such a way that the prosthetic audio elements are capable of having a connection with the mobile phone.

Digitisation issues (e.g. specifications on different technologies, know-how):

Connection of prosthetic audio devices directly with the mobile. Software to perform increasingly precise audiometric tests, to adapt the audio prostheses to each specific case and facilitate the storage of information and the interpretation of data. In addition, for a better administrative management of the audio prosthetic cabinet.

Further training opportunities/courses: In the field of health. Further training in degrees relate to health professions and degrees related to health. Physiotherapy Diplomaed Specialist - Bachelor in Medicine.

Alternative professions: You can work at prosthetic cabinet administration, Advance expert in optics for corrective lenses. Technical support for auditory prostheses. Sales expert in auditory assessment and protection systems. Audiologist. Expert in the production of auditory prosthesis materials. Expert in auditory exploration with auxiliary equipment.

Training abroad: Spain and additional qualification “European assistant”, Germany, France, England, Portugal and Italy.

Further information:

https://www.formacion-universitaria.com/fp-superior/FP_tecnico-superior-en-audioprotesis.html?LOST

https://euroinnovaeditorial.es/ciencias-sanitarias/139813-San126_3-Audioprotesis-A-Distancia.html

<https://www.educaweb.com/estudio/titulacion-tecnico-superior-audiologia-protésica/>

<https://www.revistagacetaudio.es/a-fondo/formacion-protésica-en-espana-reglamentacion/>

<https://universidadeuropea.com/blog/salidas-profesionales-audiologia-protésica/>

<https://1cursos.com/f-tecnico-en-audiologia-protésica-c-pamplona/iru%C3%B1a>

<https://www.audioprotesistas.org/es/formacion/perfil-profesional-competencias>

<https://www.todofp.es/dam/jcr:fb95ae50-ec01-403a-80f5-9627b7d667f1/n-tsaudiologiaprotésicaen-pdf.pdf>

Dental Prostheses Technician

Short job description: A Dental prostheses Technician is a person who designing, manufacturing and repairing dentofacial prostheses, orthodontic appliances and occlusal splints according to prescription and optional indications, as well as performing the necessary readjustment to finish them and managing a dental prostheses laboratory performing the operations for product commercialization, and respecting the existing regulations on safety and environmental protection as well as quality specifications.

Typical industries and operational areas: His work is carried out in in public and private health, dental consultations, stomatologists, dental clinics.

Type of training: Dental prostheses technician is a higher degree of vocational school.

Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Holding the Certificate in Post-Compulsory Secondary Education (Bachelor) or holding the corresponding access test. Technician (middle grade), the University entrance exam (PAU) card, a University degree.

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Technical handicraft lessons, Computer science, Physics, Biology, English, National Language, (Anatomy lessons)

To be a Dental prostheses technician is necessary to study Higher Technician in Dental and Oral Hygiene. Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Credits ECTS.

Laboratory of Dental Prostheses, Design of Functional Prostheses, Complete Prostheses, Orthodontic Appliances and Occlusal Splints, Restorations and Metal Structures in Fixed Prostheses, Removable Partial Metal-, Resin- and Mixed Prostheses, Restorations and Aesthetic Coatings, Prostheses on Implants, Project on Dental Prostheses, Professional Training and Guidance, Business and Entrepreneurial Initiative, On the Job Training.

Required social competencies in order to practice the profession: Care, Flexibility, Team skills, Customer orientation, Willingness to learn, Sense of responsibility, Creativity, Comprehension, Empathy, Communication skills, Patience, Sense of order, Ability to make decisions, Independent working, Motivation, Sense of ethics, Secrecy
Additional competencies: Ability to transmit knowledge, Sensitivity of environmental

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Technical understanding, Math understanding, Concentration, Commercial skills, Logical thinking, Dexterity, Analytical skills, Text comprehension, Linguistic comprehension, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability

Trends:

Trends go in the direction to not using invasive techniques on patients, and performing treatments at all ages, improving the health and life of the patient.

Digitisation issues (e.g. specifications on different technologies, know-how):

Digitisation has greatly influenced the activity of dental prosthetics, analog processes have given way to new digital techniques to digitize the profession, such as oral scanners, digital impressions, 3D impressions, CAD/CAM designs, in such a way that communication between dentist and prosthetic can be done online. The advances have meant an improvement in the work, in such a way that, although the clinic does not have digital means to make the prosthesis, it can be done with traditional means and digitized with digital tools. Digitization has led to an improvement in treatment, greater quality and precision of work, provides greater safety to patients, gives more information about work and reduces work time, reducing inconvenience to patients in their treatment. The 4.0 revolution has also revolutionized dental techniques with new production techniques, in such a way that it allows personalized work with dental prostheses and planning the work.

Further training opportunities/courses: In the field of health, Degree in Higher Technician in Dental and Oral Hygiene, Further training in degrees relate to health professions and degrees related to health, like dentist

Alternative professions: You can work at Clinic administration, Oral Clinic Patient Data Analyst.

Training abroad: Spain and additional qualification “European assistant”, Portugal, United Kingdom, Ireland, Germany, France, and Italy.

Further information:

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/ciclos-formativos-de-grado-superior/protesis-dentales/>

<https://www.todofp.es/dam/jcr:60a33751-9757-4649-beb0-2d4cb8d7968e/n-tsprotesisdentalesen-pdf.pdf>

<https://www.lavanguardia.com/vida/junior-report/20201027/4952215284/estas-salidas-profesionales-ambito-salud-dental-protesis-dental-higiene-bucodental-escola-pejoan-barcelona.html>

<https://www.unavarra.es/fac-cienciasdelasalud/>

Medical transport technician

Short job description: Medical transport technician is a person who transferring the patient to a health care Centre, and collaborating in the organization and development of emergency plans, predictable risks mechanisms and health care logistics in case of an individual or collective emergency or catastrophe.

Typical industries and operational areas: nursing public and private companies, hospitals.

Type of training: is a medium degree of vocational school.

Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Holding the Certificate in Compulsory Secondary Education or holding the corresponding access test, Bachelor, Technician (middle grade).

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Computer science, Physics, English, National Language (Anatomy lessons)

To be a medical transport technician is necessary to study Technician in Emergency Health Care. Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Credits ECTS.:

Preventive Mechanical Maintenance of the Vehicle, Emergency Health Care Logistics, Health Care Equipment, Primary Health Care in Emergency Situations, Evacuation and Transfer of Patients, Psychological Support in Emergency Situations, Emergency Plans of Action and Predictable Risks Mechanisms, Teleemergencies, Anatomophysiology and Basic Pathologies, Professional Training and Guidance, business and Entrepreneurial Initiative, On the Job Training.

Required social competencies in order to practice the profession: Care, Prudence, Team skills, Willingness to learn, Sense of responsibility, Ability to work under pressure, Empathy, Communication skills, Patience, Ability to make decisions, Assertiveness, Independent working, Motivation, Sense of ethics, Secrecy
Additional competencies: Ability to transmit knowledge, Sensitivity of environmental

Required skills in order to practice the profession: Spatial thinking, Handicraft, Eye-hand-coordination, Craft skills, Technical understanding, Power of observation, Math understanding, Concentration, Capacity of reaction, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends:

Medical transport using 5G technology

Digitisation issues (e.g. specifications on different technologies, know-how):

With a tablet or a mobile phone can send quick information to the nearest hospital for better patient care. The same to follow up on the patients that have to be transferred and to keep track of them, as well as for patients to be able to contact employees if necessary and better optimization of the service, for example, with the With the help of GPS, a better organization of transport can be carried out and service times can be reduced.

Further training opportunities/courses: Expert in auxiliary nursery care, Telecare operator.

Alternative professions: Emergency health care technician, Remote assistance operator, Operator of emergency coordination centres

Training abroad: Spain and additional qualification “European assistant”, United Kingdom, Germany, and Italy.

Further information:

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/presencial/emergencias-sanitarias/>

<https://www.todofp.es/que-estudiar/loe/sanidad/emergencias-sanitarias.html>

<https://es.euronews.com/next/2015/10/02/la-ambulancia-del-futuro-un-hospital-sobre-ruedas-interconectado>

<https://www.educaweb.com/estudio/titulacion-tecnico-emergencias-sanitarias/>

Operator of Emergency Coordination Centres

Short job description: Is a person who carrying out activities of medical teleoperation and telecare. Uses office management systems of emergency coordination centres, identifying the functions and elements of the call system. Establishes communication in embedded transmission systems, describing the elements of process of interpersonal communication. Deals with emergency requests, describing the process of reception and identifying the significant data of the request. Assesses the request for medical assistance by writing protocols of performance.

Typical industries and operational areas: Nursing public and private companies, hospitals.

Type of training: is a medium degree of vocational school.

Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Holding the Certificate in Compulsory Secondary Education or holding the corresponding access test, Bachelor, Technician (middle grade).

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Computer science, Biology, Chemistry, Economics, English, National Language, Science, (Anatomy lessons)

To be a medical transport technician is necessary to study Technician in Emergency Health Care. Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Credits ECTS.:

Alarm and danger prevention plans, External emergency plans, Emergency management, Emergency manuals, Fire protection requirement plans, Evacuation concepts, Organizational principles, Basic medical knowledge, Basic nursing knowledge, Quality management, On the Job Training.

Required social competencies in order to practice the profession: Care, Prudence, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Empathy, Communication skills, Patience, Sense of order, Ability to make decisions, Assertiveness, Power of endurance, Independent working, Willingness to perform, Sense of ethics, Secrecy

Additional competencies: Ability to transmit knowledge, Sensitivity of environmental

Required skills in order to practice the profession: Handicraft, Eye-hand-coordination, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Orientation sense, Logical thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends:

Trends in this profession are directly related to technology. New applications are created for mobile phones that make it easier to locate people in an emergency. 5G technology facilitates the connection of objects and people, allows greater storage capacity and speed and improves communication.

Digitisation issues (e.g. specifications on different technologies, know-how):

Powerful computers and geographic management tools are used to locate the location of the emergency. In addition to telephony integration tools in the computer to facilitate the work of the emergency operator, through the use of screens, keyboard and mouse.

Further training opportunities/courses: Expert in auxiliary nursery care, Telecare operator.

Alternative professions: Emergency health care technician, Remote assistance operator, Medical transport technician

Training abroad: Spain and additional qualification “European assistant”, United Kingdom, Germany, and Italy.

Further information:

<https://www.todofp.es/dam/jcr:8bc481cc-d8fa-445b-9fff-ce309441ddf9/n-temergencias-sanitariases-pdf.pdf>

<https://www.educaweb.com/profesion/teleoperador-servicio-emergencias-213/>

<https://www.tucursogratis.net/como-trabajar-de-teleoperadora-en-el-112/>

<https://revistamedica.com/historia-servicios-emergencias-sanitarias/>

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/presencial/emergencias-sanitarias/>

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/presencial/emergencias-sanitarias/tecnico-de-grado-medio-en-emergencias-sanitarias/>

Operator of Emergency Coordination Centres

Short job description: Is a person who carrying out activities of medical teleoperation and telecare. Uses office management systems of emergency coordination centres, identifying the functions and elements of the call system. Establishes communication in embedded transmission systems, describing the elements of process of interpersonal communication. Deals with emergency requests, describing the process of reception and identifying the significant data of the request. Assesses the request for medical assistance by writing protocols of performance.

Typical industries and operational areas: Nursing public and private companies, hospitals.

Type of training: is a medium degree of vocational school.

Duration of the apprenticeship/training: The course consists of 2000 hours in two training courses.

Required previous education / school leaving certificate: Holding the Certificate in Compulsory Secondary Education or holding the corresponding access test, Bachelor, Technician (middle grade).

Required school subjects, in which subjects potential trainees should perform well: Mathematics, Technology, Computer science, Biology, Chemistry, Economics, English, National Language, Science, (Anatomy lessons)

To be a medical transport technician is necessary to study Technician in Emergency Health Care. Course structure of the officially recognized Diploma Professional. Modules in de Diploma royal degree. Credits ECTS.:

Alarm and danger prevention plans, External emergency plans, Emergency management, Emergency manuals, Fire protection requirement plans, Evacuation concepts, Organizational principles, Basic medical knowledge, Basic nursing knowledge, Quality management, On the Job Training.

Required social competencies in order to practice the profession: Care, Prudence, Customer orientation, Willingness to learn, Sense of responsibility, Ability to work under pressure, Comprehension, Empathy, Communication skills, Patience, Sense of order, Ability to make decisions, Assertiveness, Power of endurance, Independent working, Willingness to perform, Sense of ethics, Secrecy

Additional competencies: Ability to transmit knowledge, Sensitivity of environmental

Required skills in order to practice the profession: Handicraft, Eye-hand-coordination, Technical understanding, Power of observation, Organisational talent, Math understanding, Concentration, Orientation sense, Logical thinking, Retentivity, Analytical skills, Text comprehension, Linguistic comprehension, Clinical skills

Interests: In health, in humans, in helping people, in medicine, in social change, in disability.

Trends:

Trends in this profession are directly related to technology. New applications are created for mobile phones that make it easier to locate people in an emergency. 5G technology facilitates the connection of objects and people, allows greater storage capacity and speed and improves communication.

Digitisation issues (e.g. specifications on different technologies, know-how):

Powerful computers and geographic management tools are used to locate the location of the emergency. In addition to telephony integration tools in the computer to facilitate the work of the emergency operator, through the use of screens, keyboard and mouse.

Further training opportunities/courses: Expert in auxiliary nursery care, Telecare operator.

Alternative professions: Emergency health care technician, Remote assistance operator, Medical transport technician

Training abroad: Spain and additional qualification “European assistant”, United Kingdom, Germany, and Italy.

Further information:

<https://www.todofp.es/dam/jcr:8bc481cc-d8fa-445b-9fff-ce309441ddf9/n-temergencias-sanitariases-pdf.pdf>

<https://www.educaweb.com/profesion/teleoperador-servicio-emergencias-213/>

<https://www.tucursogratis.net/como-trabajar-de-teleoperadora-en-el-112/>

<https://revistamedica.com/historia-servicios-emergencias-sanitarias/>

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/presencial/emergencias-sanitarias/>

<https://escuelasanitaria.educacion.navarra.es/web1/oferta-formativa/presencial/emergencias-sanitarias/tecnico-de-grado-medio-en-emergencias-sanitarias/>

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