

Erasmus+

08 Training course for
the educational program

Plumber



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Ústredie práce,
sociálnych vecí a rodinyThis project is funded by
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C. Project of the educational program - modular - general characteristics

Name and address of the applicant

Newport Group, a.s., Lazaretská 23, 81109 Bratislava

1. Name of the educational program

Plumber

Module names and their range

Module: Technical drawing 154 hours

Module: Basics of engineering 100 hours

Module: Operation, service and maintenance of water supply and sewerage systems 146 hours

2. Characteristics of the modular education program

Graduate of the module knows the basic auxiliary activities, mostly manual, mainly in the water supply sector in the operation, service and maintenance of public water mains and public sewers. Can perform activities in the operation, cleaning and disinfection of water supply networks. Knows the principles of protection of the public water supply system. He is able to perform basic and auxiliary works in sewage treatment plants and in sewage cleaning. He knows winter maintenance of water pipes, reservoirs, water supply and sewerage. He has knowledge of mechanical cleaning, sludge removal and deaeration. He is able to perform basic and auxiliary work in the cleaning of sewers and waste water treatment plants.

3. Reasoning of the justness the modular structure

The modular structure of the education program is based on the need to divide the content into three separately utilizable modules according to the needs of potential target groups.

C. Project of the educational program - modular - elaboration of module

Name and address of the applicant

Newport Group, a.s., Lazaretská 23, 81109 Bratislava

1. Name of the educational program

Plumber

Module name

Technical drawing

2. Organizational form of education

Presence

3. Target group

Persons interested in gaining professional knowledge and practical skills in plumbing.

4. Required entrance education:

at least completed primary school

5. Graduate profile

Graduate of the module will acquire basic professional knowledge and skills necessary to read technical drawings. He is able to draw sketches and diagrams according to valid technical standards. It will get an overview of the most used materials and their use in the plumbing.

6. Methods

Lecture

Practical demonstrations

Professional practice

Individual and group work on project tasks

7. Range of module 154,00 hours

8. Teaching schedule

Expert guarantor

Ing. Beáta Sárossyová

The name of the professional topic

Number of hours

Theory

Practice

Lecturers

Technical drawing	60	16	44	Gotthardtová I., Sárossyová B., Mašlonka A., Kovačič Š.
Materials used in plumbing	94	16	78	Gotthardtová I., Sárossyová B., Mašlonka A., Kovačič Š.
Total	154			

9. Module teaching scheme

Technical drawing

Introduction

Basic aids

Standardization in technical drawing

Technical imaging

Drawing sketches

Imaging in drawings for construction

Imaging and dimensioning of structures in building drawings

Project documentation of constructions

Types of drawings

Technical drawings

PROFESSIONAL PRACTICE

Basic aids

Imaging in rectangular projection

Drawing sketches

Drawing sketches

Imaging in drawings for construction

Imaging and dimensioning of structures in building drawings

Project documentation of constructions

Types of drawings

Technical drawings

Materials used in plumbing

Water pipes material

- Metallic pipes (steel, cast iron - gray, ductile)
- Non-metallic pipes (plastic - polyvinyl chloride, polyethylene, polypropylene, fibreglass)

Connections of pipes, fittings and armatures)

- Releasable joints (socket joints, flange joints)
- Plug-in socket couplings and joints, plug-in
- Non-detachable joints (welded joints, glued joints)

Classification of fittings in terms of their function in the supply system

- clasps
- regulators
- ensurance
- drain
- mounting and auxiliary
- measuring

Classification of the shut-off valves from a design point of view

- sliding shutters (sliders)
- valves
- taps
- flap closures

PROFESSIONAL PRACTICE

Occupational Health and Safety and Fire protection

Hand processing of metals

- material preparation, measurement, contouring
- filing
- cutting
- thread cutting
- straightening, bending

Working with plastics

- thermal forming
- cutting, drilling
- jointing
- bonding

Connecting pipes through joints

Connecting pipelines to fittings, armatures or pipes of other materials

Installation of armatures and fittings

Repair and maintenance of components and structures

Písomná skúška - test

Written examination – test

Requested success 60%

Practical exam – working-out project assignment + presentation of the results of the project assignment (professional interview)

Requested success min. 70%.

11. Material and technical provision

Areas

The training program takes place in modern training areas with audiovisual equipment. Training facilities include workshops whose professional equipment will enable participants in the learning program to acquire practical skills.

Technical equipment, teaching aids

Drawing aids (drawing needle, hole, dasher, angle, calliper, steel ruler angle), technical drawings, samples of materials, three-dimensional models, catalogues, wooden angles, wood scribes, joiner's pencil, various types of timber, frame saws, clamping saws, electric circular saw, spinning wheel, wood screwdriver, electric drill bit, cordless drill bit, planer, electric planer, abrasive paper, wood fasteners, glue, wood screws, nails, pins, joinery clamps, clipping pliers, file sets 250 mm, knife ruler, radius scale, file brush, sheet scissors - straight cut and arches, electric scissors for sheet metal, hand drill, electric drill, set of thread drills, drill bits, taps, threaded jaws, threads for threaded jaws, hand threaded head for pipes, threaded head for pipes electric, oil box, rubber hammer, hammer, steel hammer, hand bending machine, hand bending ribbed bars, flat chisel with guard, cross cutter with guard, bars for concrete, steel sheets

Study materials

Mikuláš, J. Oláh, D. Mikulášová – Kreslenie stavebných konštrukcií, JAGA 2006

Z.Chládeková – Stavebné materiály, Kontakt plus, BA 2005

M. Dědek – Stavebné materiály, Alfa BA 1991

C. Project of the educational program - modular - elaboration of module

Name and address of the applicant

Newport Group, a.s., Lazaretská 23, 81109 Bratislava

1. Name of the educational program

Plumber

Module name

Basics of engineering

2. Organizational form of education

Presence

3. Target group

Persons interested in gaining professional knowledge and practical skills in plumbing.

4. Required entrance education:

at least completed primary school

5. Graduate profile

Graduate of the module acquires knowledge of machine parts and equipment for transport of substances. He is able to independently select suitable technologies for maintenance and cleaning of water, water, water and sewer networks. He is able to operate small machinery for maintenance, cleaning of water supply and drainage networks. He will recognize the importance of safety and health when working with machines, mechanisms and devices used in water management. He knows the importance of protecting work and the environment.

6. Methods

Lecture

Practical demonstrations

Professional practice

Individual and group work on project tasks

7. Range of module 100,00 hours

8. Teaching schedule

Expert guarantor

Ing. Beáta Sárossyová

The name of the professional topic

Number of hours

Theory

Practice

Lecturers

Engineering	50	12	38	Gotthardtová I., Sárossyová B., Mašlonka A., Kovačič Š.
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Machine equipment	50	12	38	Gotthardtová I., Sárossyová B., Mašlonka A., Kovačič Š.
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Total	100			
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9. Module teaching scheme

Engineering

Basics of Occupational Health and Safety and Fire protection

Coupling components to form a detachable joint

- screws
- nuts, washers
- keys, pins
- pins, pivots, springs

Basic detachable and non-detachable joints

- detachable joints
- screw connections
- wedge and key joints

- flexible connections
- non-detachable joints
- pressed joints
- welded joints
- solder joints
- threaded joints
- glued joints

Parts of machines enabling movement (function, classification)

- Shafts and shaft pins
- bearings
- clutch

Gearings and mechanisms

- classification and use of gears
- types of transfers
- classification, function and use of mechanisms - types of mechanisms

PROFESSIONAL PRACTICE

Occupational Health and Safety and Fire protection

Assembly work of machine parts

Creating a detachable joints

Repair and maintenance of metal components and structures

Machine equipment

Transport and lifting machines

Pumps

- pump types, maintenance and care

Pollution and accident removal machines

- classification and function of pollution and accidents removal
- removing of water pollution
- removing soil pollution

Machinery for earthworks and melioration works

Compressors, blowers, fans

Power machines

PROFESSIONAL PRACTICE

Occupational Health and Safety and Fire protection

Small mechanization operator in maintenance and cleaning of water and sewerage networks

Adjustment, care, maintenance and common repairs of machinery and equipment in the water supply

Písomná skúška - test

Written examination – test

Requested success 60%

Practical exam – working-out project assignment + presentation of the results of the project assignment (professional interview)

Requested success min. 70%.

11. Material and technical provision

Areas

The training program takes place in modern training areas with audiovisual equipment. Training facilities include workshops whose professional equipment will enable participants in the learning program to acquire practical skills.

Technical equipment, teaching aids

Connecting components (screws, nuts, washers, keys, tongues, pins, pivots, springs), joints, shafts and shaft pins, bearings, couplings, gears, machinery, pumps, pollution and accident removal machines, machinery for earthworks and melioration works (excavators, rippers, dozers, compacting machines, extruders, trenchless drainage machines), compressors, blowers, fans.

Study materials

J.Doleček-Z.Holoubek: Strojníctvo pre 1. ročník SOU -Alfa, vydavateľstvo technickej a odbornej literatúry, Bratislava 1984

J.Doleček-Z.Holoubek: Strojníctvo II pre 2.až 4. ročník SOU -Alfa, vydavateľstvo technickej a odbornej literatúry, Bratislava 1984

J.Doleček: Stroje a zariadenia II, K. Heidinger: Prevádzka stavebných strojov

C. Project of the educational program - modular - elaboration of module**Name and address of the applicant**

Newport Group, a.s., Lazaretská 23, 81109 Bratislava

1. Name of the educational program

Plumber

Module name

Operation, service and maintenance of water supply and sewerage systems

2. Organizational form of education

Presence

3. Target group

Persons interested in gaining professional knowledge and practical skills in plumbing.

4. Required entrance education:

at least completed primary school

5. Graduate profile

Graduate of the module identifies basic manual activities in the plumbing in the operation, service and maintenance of public water mains, public sewers and wastewater treatment plants. He is capable of performing auxiliary activities in the operation, cleaning and disinfection of water reservoirs and protection of public water supply facilities. He knows carry out basic and auxiliary work in sewage treatment plants, in sewage cleaning and is able to provide winter maintenance of water mains, reservoirs, water mains and sewerage.

6. Methods

Lecture

Practical demonstrations

Professional practice

Individual and group work on project tasks

7. Range of module 146,00 hours

8. Teaching schedule

Expert guarantor

Ing. Beáta Sárossová

The name of the

professional topic

Number of hours

Theory

Practice

Lecturers

Public water supply
systems

60

8

52

Gotthardtová I.,
Sárossová B., Mašlonka A., Kovačič Š.

Public sewers

40

8

32

Gotthardtová I.,
Sárossová B., Mašlonka A., Kovačič Š.

Sewage treatment
plants

46

8

38

Jakubík L., Jozeková I.

Total

146

9. Module teaching scheme

Public water supply systems

Operation of public water systems

Principles of Occupational Health and Safety and Fire protection

PROFESSIONAL PRACTICE

Basics of operation and maintenance of objects and devices on the water pipeline

Water pipe cleaning

Repair of water supply lines and connections

Public sewers

Operation of public sewers

Principles of Occupational Health and Safety and Fire protection

PROFESSIONAL PRACTICE

Auxiliary work in the operation of public sewerage maintenance

Cleaning sewer networks

Sewage treatment plants

Operation of sewage treatment plant

Waste treatment methods in waste water treatment

Principles of Occupational Health and Safety and Fire protection

PROFESSIONAL PRACTICE

Auxiliary work in waste water treatment plants (solid waste disposal)

Waste treatment in waste water treatment

Písomná skúška - test

Written examination – test

Requested success 60%

Practical exam – working-out project assignment + presentation of the results of the project assignment (professional interview)

Requested success min. 70%.

11. Material and technical provision

Areas

The training program takes place in modern training areas with audiovisual equipment. Training facilities include workshops whose professional equipment will enable participants in the learning program to acquire practical skills.

Technical equipment, teaching aids

Devices for cleaning pipelines of water systems, repairing water lines and connections. Sewage cleaning equipment. Sewage treatment plants and water treatment plants.

Study materials

Urcikán, P., Rusnák, D. (2004): Stokovanie a čistenie odpadových vôd, Stokovanie I. Navrhovanie stokových sietí, Vyd. STU Bratislava, 2004, ISBN 80-227-2136-0, s. 323

Urcikán, P., Rusnák, D. (2008): Stokovanie a čistenie odpadových vôd, Stokovanie II. Objekty na stokovej sieti. Vyd. STU Bratislava, 2008, ISBN 978-80-227-2854-6, s. 246

Rusnák, D., Urcikán, P., Stanko, Š. (2008): Stokovanie a čistenie odpadových vôd, Stokovanie III. Kanalizačné rúry. Stavba, prevádzka a obnova stôk. Vyd. STU Bratislava, 2008, ISBN 987-80-227-2889-8, s. 186 STN EN 752 Stokové siete a systémy kanalizačných potrubí mimo budov – časť 1: Všeobecné ustanovenia a definície, časť 2: Funkčné požiadavky, časť 3: Návrh, Stavba a skúšanie kanalizačných potrubí a stôk STN EN 75 6101 Stokové siete a kanalizačné prípojky.

Kriš, J., Božíková, J., Čermák, O., Čermáková, M., Škultétyová, I., Tóthová, K. (2006): Vodárenstvo I., Zásobovanie vodou, 1. vyd. Bratislava, Vyd. STU 2006, 816 s. ISBN 80-227-2426-2