



09 Training course
for the educational program

Machine engineer
-
locksmith



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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

Machine engineer – locksmith

Module names and their range

Module: Fundamentals of manual metalworking	165 hours
Module: Fundamentals of machining	115 hours
Module: Fundamentals of assembly technology	120 hours

2. Characteristics of the modular education program

The graduate of the education program can characterize basic professional terminology in engineering. He is able to select and prepare the necessary working tools, materials and raw materials for a particular technological process and to use them efficiently. He knows manual handling of metals. He can machine metal and non-metallic materials. He is able use different types of mechanized tools.

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

Machine engineer - locksmith

Module name

Fundamentals of manual metalworking

2. Organizational form of education

Presence

3. Target group

Persons interested in gaining professional knowledge and practical skills in machine engineer – locksmith.

4. Required entrance education:

at least completed primary school

5. Graduate profile

The graduate of the module have basic knowledge in technical drawing. He can use the tools, draw sketches and read technical drawings. He knows use production drawings. He knows how to draw basic machine parts and joints. He knows basic metal processing technology.

6. Methods

Lecture

Practical demonstrations

Professional experience

Individual and group work on project tasks

7. Range of module 165,00 hours

8. Module teaching scheme

Expert guarantor

Prof. Ing. Marián Peciar PhD.

The name of the professional topic	Number of hours	Theory	Practice	Lecturers
Technical drawing	60	20	40	Môcik M., Mlynár D., Škulka M..
Hand metal processing technology	105	25	80	Môcik M., Mlynár D., Škulka M..
Total	165			

9. Teaching schedule

Technical drawing

Introduction

Basic aids

Normalization in technical drawing

Technical imaging

Drawing sketches

Dimensioning on machine drawings

Drawing of basic machine parts and joints

Production drawings

PROFESSIONAL PRACTICE

Occupational Health and Safety and Fire protection

Basic aids

Normalization in technical drawing

Technical imaging

Drawing sketches

Dimensioning on machine drawings

Drawing of basic machine parts and joints

Production drawings

Technical drawing

Technical materials (metal materials, alloys) - production, properties, use

Measurement and contouring

- basic types of filers
- manual sawing

Filing

- measuring instruments and measurement
- simple contouring

Clamping workpieces

Sawing

- basic types of saws
- manual sawing

Shearing

- basic types of hand scissors
- hand cutting

Chopping

- basic types of choppers
- manual chopping

Piercing

- basic types of piercers
- manual piercing

Drilling, tilting, roughing, reinforcing

- basic types of drillers
- manual drilling, tilting, roughing and reinforcing

Thread cutting

- outer and inner threads
- thread cutting tools
- manual thread cutting

Straightening and bending

- bending tools
- manual straightening and bending

Riveting

- types of rivets
- rivet joints
- manual riveting

PRACTICE

Occupational Health and Safety and Fire protection

Hand processing and machining of metallic materials

Using of meters

Using of contouring

Clamping according to the shape of the workpiece

Filing of planar surfaces, filing of joined surfaces, precision preparation - selection of tools, filing procedures

Cutting - tool selection, cutting procedures

Shearing - tools selection, shearing procedures

Chopping - tools selection, chopping procedures

Piercing - tools selection, piercing procedures

Drilling, tilting, roughing, reinforcing – tools selection, procedures of drilling, tilting, roughing and reinforcing
Thread cutting – tools selection, procedures of thread cutting
Straightening and bending – tools selection, procedures of straightening and bending
Riveting – tools selection, riveting procedures

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

Presentation equipment: projector, screen; PC classroom equipment; magnetic board, flipchart + fixes, blocks and stationery for participants.

Work equipment and tools: tools for metal working - saws, cutters, drills, hammers, soldering machines, grinders, welders, tools for assembly and dismantling of machines - screwdrivers, socket wrenches, fork and eye keys.

Study materials

Doc. Ing. Ľubomír Martinec, CSc., Ing. Milan Šimkovič, CSc.: Náuka o materiáloch, STU Bratislava, 1997, ISBN 80-227-1008-3

Vojtech Pulc, Viliam Hrnčiar, Ernest Gondár: Náuka o materiáli, STU Bratislava, 2008, ISBN: 8022728478

Alexander Veselý: Ručné spracovanie kovov, SVTL, 1966

Jiří Outrata: Technológia ručného spracovania kovov, Alfa, 1970

Karol Vasilko: Top trendy v obrábaní VII ,Náradie, Nástroje, Technológie, MEDIA/ST, 2015, ISBN:8588001710439

Karol Vasilko, Jindřich Hrubý, Ján Lipták: Technológia obrábania a montáže, ALFA, 1991, ISBN 80-05-00807-4

Šandera Josef: Návrh plošných spojů pro povrchovou montáž - SMT a SMD,BEN, 2006, ISBN 8073001810

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

Machine engineer - locksmith

Module name

Fundamentals of machining

2. Organizational form of education

Presence

3. Target group

Persons interested in gaining professional knowledge and practical skills in machine engineer – locksmith.

4. Required entrance education:

at least completed primary school

5. Graduate profile

The graduate of the module have basic overview of the used technical materials in the field of industrial production. He will learn basic machining techniques. He can individually select, set and use tools for machining materials. He is able use technology in the basic machining of materials correctly

6. Methods

Lecture

Practical demonstrations

Professional experience

Individual and group work on project tasks

7. Range of module 115,00 hours

8. Module teaching scheme

Expert guarantor

Prof. Ing. Marián Peciar PhD.

The name of the professional topic

	Number of hours	Theory	Practice	Lecturers
Technical materials	10	10	0	Môcik M., Mlynár D., Škulka M..
Basic machining	105	25	80	Môcik M., Mlynár D., Škulka M..
Total	115			

9. Teaching schedule

Technical materials

Properties of technical materials

Technical materials - production, properties and use

Basic machining

Turning

- types of lathes
- use of particular types of lathes
- clamping of workpieces and turning tools
- basic turning operations

Milling

- types of millers
- use of particular types of millers
- clamping of workpieces and milling tools
- basic milling operations

Drilling

- types of drillers
- use of particular types of driller
- clamping of workpieces and drilling tools
- basic drilling operations

Planing

- types of planes
- use of particular types of planes
- clamping of workpieces and planing tools
- basic planing operations

Thread manufacturing

- types of taps
- methods of making threads (inner and outer threads)

Manufacturing of gears

- ways of producing toothing
- finishing methods of producing toothing

PROFESSIONAL PRACTICE

Occupational Health and Safety and Fire protection

Choose the setting and use of the gauges

Reading of drawing

Selection, setup and use of tools, machine tools for machining materials

Basic turning works –necking-down, cutting-off, drilling, turning of front and cylindrical surfaces

Basic milling works - milling of planar surfaces, slot milling, milling of shaped surfaces, milling of gears, milling of embedding

Basic drilling works – drilling holes, reinforcing holes, reaming and hoeing holes

Basic grinding works – grinding of planar surfaces, grinding of cylindrical surfaces, grinding of tools

Basic planing works

Basic work on threads manufacture – rolling of thread, milling of thread, turning of threads, manual thread cutting and thread grinding

Basic work in gears production - Milling the teeth in a splitting manner and by self-generating method

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

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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

Machine engineer - locksmith

Module name

Fundamentals of assembly technology

2. Organizational form of education

Presence

3. Target group

Persons interested in gaining professional knowledge and practical skills in machine engineer – locksmith.

4. Required entrance education:

at least completed primary school

5. Graduate profile

The graduate of the module knows the basic parts of the machinery and equipment in the production. He is possible to use suitable tools for assembly, maintenance and adjustment of individual components and joints. He is capable of performing basic assembly operations on various types of machinery and equipment in the manufacturing industry

6. Methods

Lecture

Practical demonstrations

Professional experience

Individual and group work on project tasks

7. Range of module 120,00 hours

8. Module teaching scheme

Expert guarantor

Prof. Ing. Marián Peciar PhD.

The name of the professional topic

Number of hours

Theory

Practice

Lecturers

Parts of machinery and equipment

60

8

52

Môcik M., Mlynár D., Škulka M..

Mechanisms and devices

60

8

52

Môcik M., Mlynár D., Škulka M..

Total

115

9. Teaching schedule

Parts of machinery and equipment

Joints and fasteners

- assembly of components using dismountable joints
- assembly of components using non-removable joints

Piping and fitting

- pipe assembly
- ways of connecting the pipes
- assembly of sealing elements

PRACTICE

Occupational Health and Safety and Fire protection

Organization of the workplace

Mounting tools and aids

Assembly of parts using removable joints

Assembly of parts using non-removable joints

Modification and assembly of the connection

Pipe preparation and assembly

Pipe connection

Arrangement and piping insulation

Thread cutting on pipes, types of tube machines, production and assembly of gaskets and inserts

Checks, pressure tests, repairs

Mechanisms and devices

Machine parts

- shafts
- pivots
- motion shafts
- bearings and lines
- clutch

Mechanisms

- fixed element mechanisms – gears
- fluid mechanisms
- hydrostatic mechanisms
- pneumatic mechanisms
- mechanisms for motion transformation
- crank mechanism
- cam mechanism

Assembly of machine parts and mechanisms

PRACTICE

Occupational Health and Safety and Fire protection

Organization of the workplace

Mounting tools and aids

Mounting of transmission mechanisms

Bearing assembly - slide bearings, roller bearings

Assembly of couplings - design of coupling ends, types of joints with shaft, adjustment of keys, pins and grooves

Mounting of gear wheels – transmission of torque by gear wheels

Assembly of gears - belt, chain and belt transmissions

Assembly of mechanisms for rotation motion transmission

Pump types - assembly, disassembly

Mounting of motion-changing mechanisms

Screw mechanisms, crank mechanisms

Assembly of parts, machine maintenance, lubrication, function check and adjustment

Installation of air conditioning and hydraulics

Installation of pipes and fittings

Hydraulic installation, function check and adjustment

Measurement and maintenance

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%.

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