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QUALITYFOREST

Proposal for a new professional
qualification that includes all the
competences of the European
Chainsaw Certificate



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OCCUPATIONAL STANDARD:

FORESTRY OPERATIONS - Forestry maintenance and conservation activity/work in natural spaces

Professional Family: Agriculture

Professional area: Forestry

Level: 2

Code: AGAxxx_2

State: Underway for a proposal to INCUAL

Publication: -

Composition: From existing competence units in the catalogue

General competence

To carry out the necessary tasks of maintenance and conservation in the natural environment (forests, mountains, watersides and waterways) managing agricultural and forestry teams, machinery and tools in safe and healthy conditions, while applying criteria of quality and profitability and respecting environmental regulations and the prevention of occupational risks.

Competence units

UC1116_2: Carry out tree felling and processing with a chainsaw.

UC1119_2: To carry out work at height in trees.

UC1473_2: To work on restocking inland aquatic species and on the conservation and improvement of their habitat.

UC1121_2: To handle forestry tractors and to maintain them.

Professional setting

Professional Field

He/she is employed in large, medium sized and small, public or private companies dedicated to maintenance and conservation in the natural environment (forests, mountains, watersides and waterways) as an employee or on a self-employed basis.

Productive Sectors

He/she is situated in the agricultural sector, particularly in the forestry and gardening subsectors and in the following productive activities:

- Public administration in this sector.
- Public parks and gardens departments.
- Companies performing environmental maintenance, management and conservation in the natural environment.
- Companies performing work at height in trees.
- Arboriculture companies and pruning works at heights.
- Companies related to silviculture and other forestry activities.

- Companies focusing on silviculture support services.
- Companies working on planning, management and inventories of natural habitats.
- Concessionary companies focusing on use of hydroelectric power (works of opening and maintenance of electrical lines in forest areas).
- Companies focusing on the management of fish and crayfish populations, restocking and the adaptation and upkeep of inland aquatic habitat.

Related occupations and positions

The terms used in the following compilation of occupations and jobs are of a generic nature and encompass both men and women.

- Qualified workers in forestry and similar activities
- Self employed and employed qualified workers in forestry and similar activities
- Qualified workers in forestry and environmental activities.
- Specialised workers at companies performing hydrological-woodland conservation.
- Specialised workers at road building and maintenance companies.
- Specialist worker in timber and logging facilities
- Tractor driver
- Chainsaw operator, feller, cutter
- Specialist in work at height in trees
- Specialist in pruning at height
- Arborist
- Specialised worker in maintenance and conservation of natural habitats
- Specialised worker in restocking of game, fish and crayfish species.

Related Learning (480 hours)

Learning Modules

MF1116_2: Felling and processing of trees with a chainsaw. (120 hours)

MF1119_2: Work at height in trees. (120 hours)

MF1473_2: Restocking of inland aquatic species and conservation and improvement of their habitat. (120 hours)

MF1121_2: Use and maintenance of forestry tractors. (120 hours)

COMPETENCE UNIT 1

To carry out the felling and tree's processing using a chainsaw

Level: 2

Code: UC1116_2

State: BOE (Official State Gazette)

Professional performance and performance criteria

PP1: To carry out the servicing and maintenance of the chainsaw and the work equipment to keep them in perfect working order.

PC1.1 The chainsaw's safety features are checked to ensure that they are in good condition and they are replaced or repaired if necessary to guarantee the safety and health at work.

PC1.2 The chain is checked, sharpened, tightened or replaced if necessary to guarantee safe working conditions in line with the operating conditions recommended by the manufacturer or in the good practice guidebooks.

PC1.3 The blade is checked, cleaned and adjusted if necessary to guarantee safe working conditions in line with the operating conditions recommended by the manufacturer or in the good practice guidebooks.

PC1.4 The spark plug and the air and fuel filters are checked or replaced in accordance with the manufacturer's instructions to guarantee a correct mix of fuel and/or lubricants, in such a way that minimises environmental impact, increases the performance and prolong the life of the machine.

PC1.5 The chain sprocket is checked and replaced if necessary to avoid wear/deterioration of the drive links and facilitate greasing in line with the operating conditions recommended by the manufacturer or in the good practice guidebooks.

PC1.6 The starter mechanism is checked, cleaned and adjusted if necessary to guarantee safe working conditions in line with the operating conditions recommended by the manufacturer or in the good practice guidebooks.

PC1.7 The chainsaw is started and checked to ensure it is working properly and adjustments and/or repairs are carried out if necessary.

PC1.8 The personal protective equipment is checked regularly to ensure it is appropriate and in full compliance with the safety regulations in force, the obsolescence deadline or period of obsolescence of personal protective equipment or its components has not expired and that any deterioration or wear does not make it dangerous or unsafe for the worker and facilitates his/her protection.

PC1.9 The personal first aid kit is checked regularly to ensure it includes everything necessary and is in good condition with nothing expired to guarantee the availability of basic sanitary equipment to deal with a possible accident.

PC1.10 The work is carried out in safe and healthy working conditions, complying with occupational risk regulations and/or the site's safety plan, while respecting the environment and in accordance with any specific regulations on the work being performed.

PP2: ETo carry out felling work on trees with a chainsaw for their economic exploitation, cutting as low as possible while keeping occupational risks to a minimum.

PC2.1 The ground is outlined in order to organise the work and facilitate haulage.

PC2.2 Felling is prepared by cleaning the base of the tree, determining the fall direction and keeping the extraction routes free of obstacles.

PC2.3 The directional notch is made in line with the chosen fall direction in order to facilitate the subsequent process and haulage, causing as little damage as possible.

PC2.4 The felling cut is performed by using different techniques according to the relation between the length of the chainsaw's blade, the diameter of the tree and its inclination so that it falls in the right direction without damage to timber and keeping occupational risks to a minimum. .

PC2.5 The cost of work to be carried out by the self-employed should be estimated with a view to advancing overheads.

PC2.6 The work is carried out in safe and healthy working conditions, complying with occupational risk regulations and/or the site's safety plan, while respecting the environment and in accordance with any specific regulations on the work being performed.

PP3: To carry out the processing of wood and logs with a chainsaw for its economic exploitation to ensure the greatest amount of timber possible whilst keeping occupational risks to a minimum.

PC3.1 Delimiting with a chainsaw is performed with techniques which improve performance and minimise occupational risks.

PC3.2 Timber from the fallen tree is marked to cut the logs to the required length.

PC3.3 The timber is cut perpendicularly along the points marked in order to obtain logs, avoiding tearing and getting the blade caught.

PC3.4 The logs are bunched into groups according to their quality and destinations to facilitate loading with a crane.

PC3.5 The cost of work to be carried out by the self-employed should be estimated with a view to advancing the cost of overheads.

PC3.6 The work is carried out in safe and healthy working conditions, complying with occupational risk regulations and/or the site's safety plan, while respecting the environment and in accordance with any specific regulations on the work being performed.

Professional context

Means of production

Measuring equipment: measuring tapes, tree callipers and so forth. Means and material for signage and marking. Personal protective equipment for working with a chainsaw. Felling lever, axe, mallet and suchlike. Belt with: auto-rewind tape measure, cant hook, pliers, wedges, files, chainsaw ignition keys and a first aid kit. Winch. Debarker. Spare parts for the basic upkeep of the machinery.

Products and outcomes

Felled, limbed, bucked and occasionally debarked trees. Logs selected and bunched together.

Information used or generated

Topographical plans. Catalogues of forest species. Production charts. Price lists of wood and logs.

Price lists of different jobs. Technical plan or project of forest use.

Machinery and equipment user and maintenance guides. Examples of occupational risk prevention plans and safety plans.

Regulations in force regarding health and safety. Specific legislation on the work to be carried out.

COMPETENCE UNIT 2

To carry out works-at-height in trees

Level: 2

Code: UC1119_2

State: BOE (Official State Gazette)

Professional performance and performance criteria

PP1: To climb up to and move around tree crowns safely.

PC1.1 Tree climbing equipment is inspected to check the state of each of its parts prior to use and replacement of faulty material is ordered if necessary.

PC1.2 The tree to be climbed is inspected to detect risk situations for workers and/or protected species.

PC1.3 The ascent, movement around the tree crown and the descent are planned prior to carrying out work at height.

PC1.4 The work area is signposted to avoid accidents.

PC1.5 Tree climbing equipment is placed in position and well adjusted to ensure occupational safety.

PC1.6 Climbing equipment is installed in the tree in order to ascend to the crown and work according to prior planning and in accordance with current safety and health regulations.

PC1.7 The tree is climbed as far as the place of work and a suitable secure anchor is set with a view to minimising reattachment whilst moving throughout the tree crown.

PC1.8 Movement throughout the tree crown should be made while anchored and maintaining safe postures including when it is necessary to change the anchor in order to ensure safety.

PC1.9 During descent the worker should be secured at all times in accordance with good practice and current safety regulations.

PC1.10 Climbing equipment is gathered once back on the ground and its state is inspected to disable any damaged material.

PC1.11 The material is stored in an orderly manner to ensure proper upkeep and store staff are informed of its condition.

PC1.12 Work should be carried out in accordance with the safety and health requirements while complying with risk prevention and the site's safety regulations. The environment and any specific regulations related to the work to be carried out should also be respected.

RP2: To prune trees at height in order to shape them for their intended function and achieve the intended objectives.

PC2.1 Areas where pruning is to take place should be signposted in accordance with safety criteria.

PC2.2 Branches which are inaccessible from the ground are selected and pruned to achieve an optimal shape for their intended function over time without weakening the tree's vigour.

PC2.3 Branches which are inaccessible from the ground and present safety risks and health problems are pruned back completely.

PC2.4 The selected branches are cut while respecting the callus tissue, cutting cleanly without causing bark tearing or exceeding the maximum cutting diameter to facilitate a speedy and complete closing of the wound.

PC2.5 Cuts and wounds on the trees are treated, if necessary, to prevent infection.

PC2.6 Pruned branches are cut up to separate logs from debris and the former are eliminated.

PC2.7 The cost of work to be carried out by the self-employed should be estimated with a view to advancing the client's overheads.

PC2.8 The budget for pruning work should be monitored and adjusted in the event of deviation.

PC2.9 The action plan for emergencies should be applied in accordance with its contents.

PC2.10 Pruning work should be carried out in safe and healthy conditions, complying with occupational risk regulations and the site's safety plan, while respecting the environment and in accordance with any specific regulations on the work being performed.

RP3: Machinery and tools used for pruning at height should be managed while taking the relevant health and safety measures.

PC3.1 Workers at ground level are in contact with those situated stably in the tree crown and once the main and secondary anchors are installed, pruning equipment is transferred to the latter.

PC3.2 The chainsaw is started with the chain brake engaged while following health and safety guidelines as much so in trees as when using a raised platform, basket or suchlike.

PC3.3 Changes in position aloft the tree should be made with the chain brake engaged and the chainsaw switched off, and if necessary, an additional anchor point will be installed and released from its sling until the new working position is established.

PC3.4 Branches are cut to the required distance using suitable techniques in accordance with their size and shape both aloft trees or when using a raised platform, basket or suchlike.

PC3.5 Large branches are cut in parts until reaching the required distance to prevent bark tearing and/or risks in the use of the chainsaw both aloft trees or when using a raised platform, basket or suchlike.

PC3.6 The chainsaw is switched off after engagement of the chain brake when handling branches or pieces of them both aloft trees or when using a raised platform, basket or suchlike.

PC3.7 Work at height is carried out while aware of activities on the ground below and giving ground personnel the necessary instructions to avoid jeopardising their safety.

Professional context

Means of production

Tree slingshot, carabiner, harnesses, slings, ladders, loppers, chainsaws, axes, handsaws, personal protective equipment, cork ruler, whetstone, crane, crane loading platform or crane basket.

Products and outcomes

Tree work at height respecting safety regulations and the environment.

A botanical bibliography of the tree species to be worked on at height. Manuals on tree pruning, vertical work, tree climbing and pruning at height, arboriculture, controlled felling. Catalogues in pruning machinery, climbing equipment, cranes, loading platforms and crane baskets. Regulations on occupational risk prevention. Tariffs and performance tables. Best practice manuals.

COMPETENCE UNIT 3

To carry out repopulation work on inland aquatic species and the conservation and improvement of their habitat

Level: 2

Code: UC1473_2

State: BOE (Official State Gazette)

Professional performance and performance criteria.

PP1: To carry out restocking and maintenance work on fish and crayfish populations in order to keep their balance in line with standardised protocols, in conditions of quality and safety, while complying with regulations in force.

PC1.1 Protocol and procedures for catching inland aquatic species for different purposes (handling and marking) are applied with a view to causing minimum stress and skin damage (erosions) and other injuries as possible.

PC1.2 Specimens suitable for restocking are selected in fish farms and transported in line with established protocol.

PC1.3 The specimens are released in the least possible stressful conditions, thereby guaranteeing their adaptation to the constraints of the receiving environment.

PC1.4 Particularly aged fish are identified and caught in line with established protocol.

PC1.5 Relevant data and observations are recorded in field reports in line with established methodology.

PC1.6 The search for the source of in the event of mass fish mortality is carried out through the taking of samples of water and dead specimens and in their removal and disposal in line with instructions and established protocol.

PC1.7 The means, equipment, machinery and tools used in restocking and maintenance of populations of fish, crayfish and other inland aquatic communities are selected, handled and maintained according to technical specifications.

PC1.8 Restocking and maintenance of fish, crayfish and other inland aquatic communities are carried out in accordance with regulations in force and the occupational risk prevention plan, while following criteria for quality and profitability as well as respecting the environment and the specific regulations regarding the work to be undertaken.

PP2: To carry out conservation and improvement work on the riverbed or watercourse for the orderly use of the river ecosystem, following instructions in conditions of quality and safety and complying with regulations in force.

PC2.1 Spawning grounds are located and observed to ensure worthwhile use and to prevent poaching among other concerns.

PC2.2 All necessary elements for the increase in availability of refuge zones to obstruct poaching are installed on the riverbed according to instructions.

PC2.3 Remains and debris after floods or uncontrolled dumping or obstacles for the movement of inland aquatic species are removed as part of scheduled programmes.

PC2.4 Vegetation in the watercourse (especially invasive flora) is cut, pruned or removed according to instructions.

PC2.5 Different types of fish ladders (baffle, elevator, rock-ramp and suchlike), fishways and counting systems are built, maintained and serviced in accordance with the planning set out for each river.

- PC2.6** Security systems such as grids, grates and similar, are installed and maintained according to instructions.
- PC2.7** The circulating water flow is visually checked or with simple methods to ensure it is never inferior to the ecological flow, while checking that the extraction is legal and is within the granted flow.
- PC2.8** The detection of authorised or illegal effluents affecting the conservation and management of the inland aquatic habitat is carried out by means of water flow sampling for later analysis.
- PC2.9** The means, equipment, machinery and tools used for the conservation and improvement of the riverbed or water flow are selected, handled and maintained in line with their technical specifications.
- PC2.10** Conservation and improvement work on the riverbed or water flow is performed in accordance with existing regulations and the occupational risk prevention plan while following criteria regarding quality and profitability as well as the environment and the specific regulations with respect to the work to be carried out.
- PP3:** To perform conservation and improvement work on the riverside and its facilities in order to foster the conservation and orderly use of the river's ecosystem, following instructions and maintaining quality and safety as well as complying with the regulations in force.
- PC3.1** Vegetation on the waterside (especially invasive flora) is cut, pruned or removed according to instructions given.
- PC3.2** The cuttings or stem cuttings for the repopulation of waterside species are obtained from selected specimens in suitable condition for repopulation, and are then transported and stored in a way that guarantees their feasibility.
- PC3.3** Repopulation work on watersides (spacing, bare root planting or with the root ball method), upkeep and replanting according to instructions given.
- PC3.4** Pathways, anglers' paths, fishing spots, support, huts and other infrastructure for the assistance of fishing or safety are built or fostered and maintained according to instructions.
- PC3.5** Walkways, including collapsible ones are built, installed and maintained according to instructions.
- PC3.6** Signposting aimed at ordering fish farming development or improving safety should be installed according to instructions and should be maintained and supervised.
- PC3.7** All equipment, means, machinery and tools used for conservation and improvement work on watersides and facilities therein are selected, handled, managed and maintained in line with technical specifications.
- PC3.8** Conservation and improvement work on the waterside and its facilities are performed in line with regulations in force and the occupational risk prevention plan, while following criteria for quality and profitability as well as respecting the environment and the specific regulations regarding the work to be undertaken.
- PP4:** To undertake monitoring of the river and lake environment to foster its conservation and orderly use and provide its users with advice in conditions of quality and safety, while complying with regulations in force.
- PC4.1** Advice given to users of a given fishing stretch is offered in line with the quality of the spot and safety and environmental conditions.
- PC4.2** Fishing dates, the number of anglers and the type of anglers is recorded in collaboration with the hatchery.
- PC4.3** The number of fish caught of each species is recorded and communicated for its inclusion in a fishing statistics register.
- PC4.4** The conservation and orderly use of the riverbed, waterside and water as well as the infrastructure intended for fishing, personal safety and the conservation of species is checked in accordance with instructions.

PC4.5 Work reports, both simple reports and reports on the evolution of species or situations related to the conservation and use of rivers and lakes are completed and passed on to personnel in charge.

PC4.6 All equipment, means, machinery and tools used for river and lake monitoring and management are selected, handled, managed and maintained in line with technical specifications.

PC4.7 River and lake monitoring and management work is carried out in accordance with regulations in force, the occupational risk prevention plan and will follow quality and profitability criteria, as well as respecting the environment and the specific regulations regarding the work to be performed.

Professional context

Means of production

Equipment for catching inland aquatic species (electric fishing equipment, scoop nets, nets for fish and macroinvertebrates, landing nets and suchlike).

Equipment for harvesting, sampling, transfer and classification of specimens in fish farms. Water sampling and sample stabilisation equipment

Tissue sampling equipment. Portable fridges. Vehicles adapted for the transport of fish, fishing vessels. Oxygenation equipment. Chainsaws. String trimmers.

Manual tools for pruning and harvesting (billhooks, rakes, harvesting and pruning tools and suchlike).

Special equipment for harvesting aquatic plants. Planting tools (for beachgrass, hoe, auger and suchlike). Forestry machinery (tractors and equipments). Electronic diaries. Communication equipment. Personal Protective Equipment (PPE).

Products and outcomes

Inland aquatic habitat suitable for the production of quality sustainable inland aquatic species, which are compatible with the conservation of the former. Fish populations, crayfish and other suitable aquatic communities, without unknown pathologies, with a balanced gender and age ratio, a controlled harvesting rate and an absence of accidents untypical of the biotope. Improvement of water flow and the riverbed. Spawning grounds, flowing and riverbed vegetation, fish ladders and safety systems like grids and grates and suchlike in good condition.

Effluents detected. Improvement work on the riverside and its facilities performed.

Riverside vegetation and facilities conserved. Monitoring of the waterway and advice provided to its users.

Information used or generated

Inland aquatic species identification guides. Identification guides for watercourse and riverbank plant species. Identification guides for invasive species (fauna) and non-protected predators (fauna). River management plans. Fishing regulations. Work reports.

Field reports. Technical guidebooks for the use and maintenance of machinery, tools and equipment. The highway code and complementary regulations. Action protocol for different procedures. Manual on basic sanitary and first aid techniques. Occupational risk prevention and safety plan.

Quality criteria. Environmental regulations. Specific regulations.

COMPETENCE UNIT 4

To handle forest tractors and to do their maintenance

Level: 2

Code: UC1121_2

State: BOE (Official State Gazette)

Professional performance and performance criteria

PP1: To prepare the forestry repair shop for repair work and maintenance of machinery in an orderly manner while optimising space.

PC1.1 Tools and machinery are to be maintained while they are in good working condition.

PC1.2 Material's condition is checked over.

PC1.3 The repair shop is kept clean and tidy, optimising space to facilitate access to tools and equipment.

PC1.4 The need for spare parts and restocking is detected and communicated to the relevant party.

PC1.5 Work is carried out in safe and healthy conditions, complying with the occupational risk prevention plan and following regulations regarding the environment and occupational safety.

PP2: Handling of machinery and tools to carry out minor breakdowns should be performed in safe and healthy conditions. .

PC2.1 Breakdowns are identified and it is decided which ones should be repaired by specialised personnel.

PC2.2 Soldering is performed with equipment that is appropriate for the material to be soldered and its thickness to achieve good resistance of joints.

PC2.3 Parts are cut with suitable machinery and tools that possess the required precision.

PC2.4 Grinding and polishing is performed with the most suitable machinery and tools to achieve an optimal finish.

PC2.5 Moulding is carried out with the machinery and necessary means to give the required form to machine parts.

PC2.6 Parts are manufactured with the necessary machinery to achieve optimal precision.

PC2.7 Parts are riveted with suitable equipment and rivets to ensure a secure joint.

PC2.8 Cleaning of machines and their parts is carried out with proper means to ensure they are degreased and dirt free.

PC2.9 Surfaces to be painted are prepared to ensure a good adherence and finish.

PC2.10 Painting is done by the most suitable means for the type of paint, surface and required finish.

PC2.11 Work is carried out in safe and healthy conditions, complying with the occupational risk prevention plan, while following regulations regarding the environment and occupational safety.

PP3: Forestry tractors and traction equipment are kept in perfect condition while following technical specifications.

PC3.1 The power supply is checked over and the fuel filter is replaced with the recommended frequency.

PC3.2 The cooling system is checked, cleaned and if it is water-based, the level is checked.

PC3.3 The oil is checked and topped up regularly and the filter is replaced to maintain the engine in perfect condition in accordance with the maintenance manual.

PC3.4 Greasing is performed regularly with the correct type and quantity of lubricant.

PC3.5 The battery is kept in good condition by following the maintenance manual and the ignition system is checked.

PC3.6 The lighting system is checked and if necessary, bulbs and/or fuses are replaced and minor faults are repaired.

PC3.7 The air filter is cleaned or replaced when recommended by the maintenance manual.

PC3.8 The transmission system is serviced and the oil level in the gear box is checked, as is its perfect functioning.

PC3.9 Tyres and chains are checked regularly any problems are solved.

PC3.10 A record is kept of maintenance operations, noting the required frequency with which they are to be repeated and any observations.

PC3.11 Work is carried out in safe and healthy conditions, complying with the occupational risk prevention plan, while following regulations regarding the environment and occupational safety.

PP4: To handle tractors and traction equipment for use on public roads while operating and steering them properly.

PC4.1 The mechanical state of tractors for forestry work is checked before ignition.

PC4.2 Tractors are handled bearing in mind the work to be performed, controlling their functioning, steering them properly and driving at a suitable speed.

PC4.3 Machinery and implements attached to the tractor for forestry work should be indicated clearly in accordance with the highway code and any additional regulations regarding driving agricultural vehicles on public roads.

PC4.4 Tractors and traction equipment are to be manoeuvred in accordance with the specific safety regulations for each one of them.

PC4.5 Basic sanitary techniques and first aid are applied speedily in the event of an accident.

PC4.6 The preparation and handling of tractors are carried out while taking into account the company's occupational risk prevention plan and its environmental best practice manual.

Professional context

Means of production

Manual tools: spanners, wire cutters, pliers, hammers, screwdrivers, chisels, punches, drift punches, burins, tracers, files, pullers, riveters, sheet cutters, grease guns.

Measuring equipment: bore gauge, micrometer screw, square, gauges, thread pitch gauges.

Electrical equipment: battery charger, soldering irons, emery cloth, angle grinder, drill, electric screwdriver, circular saw, fret saw, sander, high pressure cleaner, parts cleaner, air compressor and accessories. Work benches, hydraulic jack, tractors or traction equipment, most frequent implements attached and/or fitted to tractors. Engines. Personal protective equipment.

Products and outcomes

Tractors in optimum working condition due to good regular maintenance. Fewer mechanical problems as the result of appropriate maintenance. Breakdowns repaired with means available in the repair shop. Skilful and safe handling of tractors. Equipment attached and adjusted appropriately for transport and commencement of work.

Information used or generated

Tractor service and repair shop manuals, machinery, equipment and technical information on the possibilities and limitations of machinery to be used, on maintenance processes of tractors and traction equipment. Regulations regarding occupational and environmental hazards. The highway code and additional regulations. Best practice manual.

Maintenance report. Manual on basic sanitary techniques and first aid.

LEARNING MODULE 1

Felling and tree's processing with a chainsaw

Level: 2

Code: MF1116_2

Related to the CU: UC1116_2 - To carry out the felling and tree's processing using a chainsaw.

Duration (hours): 120

State: BOE (Official State Gazette)

Capacities and assessment criteria

C1: To describe the features and parts of a chainsaw as well as the equipment necessary to work and maintain it.

AC1.1 Describe the personal protective equipment for work with a chainsaw.

AC1.2 Describe chainsaws' safety features.

AC1.3 Describe ancillary equipment for work with chainsaws.

AC1.4 Explain the components and the functioning of the machine, defining the different working elements, their functionality and optimum work features.

AC1.5 Describe the regular maintenance tasks performed on the machine and the equipment.

AC1.6 Explain how to refuel and restart the chainsaw safely.

AC1.7 In a perfectly identified case study involving the maintenance of a chainsaw and the equipment necessary to work with one:

- Check that all elements of personal protective equipment are available and that they are in good working order; if not, discard them.
- Check that the machine and especially its safety features are operative.
- Carry out maintenance on the safety features.
- Carry out maintenance on the cutting system (blade, chain and sprocket).
- Perform cleaning operations and replacement of filters and the spark plug.
- Carry out adjustment and replacement of starting mechanism components.
- Check that the first aid kit has everything necessary and is ready for use.
- Refuel the machine with the correct mix and top up the chain oil reservoir.
- Start up the chainsaw safely, keeping correct work positioning while checking its safe operation and taking any necessary measures in case it is not in good working order.
- Complete a maintenance report, recording any observations and an estimated time for the next service.
- Perform the aforementioned work while taking the necessary occupational risk prevention measures, minimising environmental impact in line with regulations in force.

C2: To describe tree felling techniques with a chainsaw in different situations to obtain the greatest amount of timber possible while keeping risks to a minimum.

AC2.1 Describe the constraints determining the natural fall direction of a tree and the circumstances that may oblige one to choose a different one.

AC2.2 Explain how to make the directional knot in a tree, bearing in mind the different circumstances one may be in (balance, lean, hollowness, etc.).

AC2.3 Explain the different techniques for the felling cut with respect to the tree's diameter, the blade and possible special conditions of the tree and its surroundings.

AC2.4 Explain how to control tree fall speed, the main risks involved in the task and the working techniques and preventative measures to be taken.

AC2.5 When presented with a tool or a piece of material or equipment used in the felling and use of trees with a chainsaw, describe it and relate it to such work (wedges, lever, mallet, etc.).

AC2.6 Present occupational risk situations during tree felling and processing operations with a chainsaw and the preventative measures to avoid them.

AC2.7 In a perfectly identified practical case study:

- Outline the ground, setting its edges and planning the haulage work.
- Prepare an action plan in the event of emergency and have the necessary means available to carry it out.
- Check that all possible work equipment is at hand even in the event of possible incidents and that it is in perfect working condition.
- Perform preparatory tree felling operations: clearing of the base of the tree and the escape routes, delimiting and ensuring that there is no risk to bystanders or animals.
- Carry out the felling of straight or slightly forward leaning trees with a cutting diameter which is inferior to blade length
- Carry out the felling of straight or slightly forward leaning trees with a cutting diameter which is superior to blade length but less than double its length.
- Carry out the felling of straight or slightly forward leaning trees with a cutting diameter which is superior to double blade length.
- Carry out the felling of hard leaning or top heavy trees.
- Carry out the felling of trees against the natural lean.
- Carry out the felling of hollow, rotten and dried out trees.
- Carry out the felling of trees downed by the wind.
- Solve situations in which trees are stuck.
- Do calculations in order to evaluate the work financially.
- Carry out the aforementioned work while taking occupational risk prevention measures, minimising environmental impact and following the regulations in force.

C3: To describe tree processing techniques with a chainsaw to facilitate their later utilisation.

AC3.1 Determine the risks involved and explain the preventative measures to be taken during delimiting operations.

AC3.2 Explain different delimiting techniques and state which one is recommendable in each case.

AC3.3 Explain how to mark with auto-rewind tape measures to obtain logs to the required measurements.

AC3.4 Determine the risks involved and explain the preventative measures to be taken during log cutting and stacking operations.

AC3.5 Explain cutting techniques which avoid unnecessary risks and facilitate efficient work, indicating particularly when wood tension and compression is present.

AC3.6 In a perfectly identified practice on the processing of a felled tree:

- Carry out risk evaluation and take preventative measures prior to task commencement.
- Prepare an action plan in the event of emergency and have the necessary means available to carry it out.
- Check that the necessary equipment is at hand and that it is in perfect working condition.
- Carry out delimiting and marking with suitable techniques.
- Cut logs to the required length.
- Stack the logs, bunching them by quality and facilitating their subsequent haulage.
- Leave the work area tidy and clean and if necessary, leave warning signs to prevent any accidents.
- Do calculations in order to evaluate such work financially.
- Perform the aforementioned work while taking the necessary occupational risk prevention measures, minimising environmental impact in line with regulations in force.

Capacities whose acquisition should be completed in a real working environment

C1 with respect to CE1.7; C2 with respect to CE2.7; C3 with respect to CE3.6.

Other capacities:

Adapt to the company's work organisation and understand the hierarchical relations within it.

Interpret instructions properly and become responsible for carrying them out.

Communicate effectively with the right interlocutor at every moment.

Follow timetables and the rhythm of work, fulfilling daily performance objectives fixed by the company.

Display interest in the company's growth forecasts.

Become involved in the company's quality plan and in the improvement of occupational health and safety.

Display a respectful attitude to colleagues, procedures and the company's internal regulations.

Contents

1 The chainsaw and its equipment

Chainsaws: types, components, safety devices and elements. Personal protective equipment. Ancillary work equipment.

2 Maintenance

Maintenance and repair of minor breakdowns. Refuelling and start up. Tools and means to be used.

Risk assessment and preventative measures to be taken (health, safety and ergonomics).

3 Felling

Felling: choice of chainsaw and/or type of blade and chain. Planning of felling: sequence of work, extraction routes, obstacles, inspection of the tree to be felled and meteorological conditions, escape routes, preparation for cutting. Cutting techniques: notch and felling cut, control of falling speed, different techniques according to the relation between the cutting diameter and blade length,

Special techniques: leaning and top heavy trees, hollow trees.

Particularly hazardous situations. Procedure in the event of emergency and evacuation.

4 Processing

Delimiting techniques. Log cutting: tension and compression of wood, cutting techniques. Stacking. Procedure in the event of emergency and evacuation.

5 Basic regulations regarding the felling and processing of trees.

Forestry legislation. Environmental regulations. Regulations on occupational risk prevention.

Learning context parameters

Spaces and facilities

An agricultural workshop with an area of 90 m²

Multipurpose classroom of at least 2 m² per student. Premises: Minimum area of 10 hectares (wooded ground) (A unique space not necessarily situated in the educational centre)

Professional profile of teaching staff:

1. Command of the knowledge and techniques related to the felling and processing of trees with a chainsaw, which should be accredited in one of the following ways:
 - An academic qualification as a Technical Engineer or of a similar type at higher level and related to this professional field.
 - Professional experience of at least 3 years in the competences related to this learning module.
2. Accredited pedagogical competence in accordance with the relevant authority's regulations.

LEARNING MODULE 2

Work-at-height in the trees

Level: 2

Code: MF1119_2

Related with CU: UC1119_2 - To carry out works-at-height in trees.

Duration (hours): 120

State: BOE Official State Gazette

Capacities and assessment criteria

C1: Explain climbing techniques and movement around trees and in a practical case study, climb a tree while specifying the risks. .

AC1.1 Describe the different stages of climbing a tree, pointing out the technical difficulty and the risks involved with each one.

AC1.2 Recognise the defects and signs of deterioration of material and equipment used for climbing and moving around trees.

AC1.3 Describe indications and signs associated with the presence of dangerous and/or protected animals in trees as well as defects in the wood.

AC1.4 Explain the determining factors involved in the difficulty of ascending, moving around and descending from trees.

AC1.5 Present a tool, piece of material or equipment for climbing or moving around trees, identify it, relate it to its stage in the work process, describe its parts, explain how to maintain and to work with it.

AC1.6 Present a crane basket, loading platform or crane used in work at height; identify it, relate it to its stage in the work process, describe its parts, explain its maintenance, its individual safety gear, safety systems and how to operate it.

AC1.7 Present the most common occupational risk situations during the climb and the preventative measures to be taken.

AC1.8 Present the most common occupational risk situations in the use of crane baskets, loading platforms or cranes and the preventative measures to be taken.

AC1.9 In a practical case study of climbing a tree:

- Explain the steps to be taken to ascend, move around and descend from a tree.
- Check the climbing equipment.
- Attach to one's body and install in the tree each part of the climbing equipment.
- Climb the tree and move around in it, moving the anchors when necessary.
- Descend from the tree.
- Carry out the aforementioned work taking the necessary occupational risk prevention measures, while minimising environmental impact and complying with regulations in force.

C2: Explain pruning techniques and the grounds for them.

AC2.1 Describe the anatomical, physiological and mechanical basics of wood which determine tree pruning work.

AC2.2 Select signposting techniques for work areas.

AC2.3 Distinguish between formative pruning, maintenance and crown reduction while specifying the aims and particularities of each one.

AC2.4 Explain pruning techniques and procedures which facilitate the clean cutting of branches without bark tearing or contagion to other trees.

AC2.5 Identify techniques for the treatment of pruning wounds.

AC2.6 Explain branch cutting techniques: crown cleaning, thinning and reduction, specifying when each one is used.

AC2.7 Explain the transfer of the chainsaw and other tools aloft the tree, including any technical or safety particularities.

AC2.8 Identify tools, material, machinery and equipment used in pruning work; relate them with stages of the work process, describe their parts, explain how to maintain and operate them.

AC2.9 Present the most common occupational risk situations during pruning, and preventative measures to avoid them.

C3: In a practical case study, prune with a chainsaw or other tools at height from the treetop, a crane basket or crane loading platform.

AC3.1 Signpost work areas.

AC3.2 Observe the tree and identify pruning needs in accordance with aims.

AC3.3 Climb the tree, move around the crown and establish an anchor in the work position safely.

AC3.4 Handle the loading platform, crane basket or crane in accordance with safety regulations.

AC3.5 Select the branches to be pruned in accordance with aims.

AC3.6 Prune branches with a chainsaw or other tools selecting possible cutting points and applying techniques according to the tension of branches.

AC3.7 Treat wounds and cuts to avoid possible infections.

AC3.8 Carry out calculations to undertake financial assessment of such work.

AC3.9 Do the aforementioned work while adopting occupational risk prevention measures and keeping environmental impact to a minimum with respect to regulations in force.

Capacities whose acquisition should be completed in a real working environment

C1 with respect to AC1.9; C3 with respect to all its criteria.

Other capacities:

Adapt to the specific organisation of the company and participate in its technical/professional relations.

Understand and carry out instructions and be responsible for one's own work, communicating effectively with the right person in each case.

Become used to the company's work rhythms and fulfilling the daily performance objectives of the organisation.

Display a respectful attitude to colleagues, procedures and the company's internal regulations.

Contents

1 Climbing techniques

General principles of work at height. Techniques for working in trees. Basic climbing techniques. Sling shot launch. Ascent and its movements: prusiking, ascension with a foot loop or similar. Movement technique:

movements around the tree crown. Anchoring methods at height. Descent: use of descending devices. Knots. Fastening and fall arrest systems. Tools and equipment: handling and upkeep. Safe climbing. Emergency plan: rescue. First aid.

2 Other means and equipment for work at height.

Cranes, baskets and loading platforms. Types: features and application.

Components: hydraulic system, control system, safety systems. Most common breakdowns. Regular maintenance. Handling: control and handling mechanisms control devices, safety features, risk situations, basic medical techniques.

3 Pruning techniques

Basics of plant anatomy, and the mechanical properties of wood physiology. Pruning seasons. Functions and aims of tree pruning: basics. Technical, aesthetic, urbanistic and sanitary grounds for pruning.

Types of pruning: formative pruning and maintenance in trees; formative pruning and maintenance in ornamental trees.

Tree pruning techniques. Techniques for the complete elimination of branches. Crown raising. Branch cutting techniques. Proper and improper cuts. Treatment of cuts, wounds, blows and bark tearing in trees. Pruning machinery and tools: use of the chainsaw at height. Guided descent of branches by means of ropes. Mechanical assistance. Signposting of work areas. Debris: treatment. Yield estimation. Preparation of small estimates.

4 Basic regulations regarding work at height in trees.

Regulations on occupational risk prevention. Environmental regulations.

Learning context parameters

Spaces and facilities:

Multipurpose classroom of at least 2 m² per student.

Premises: Minimum area of 1,000 ares (wooded ground) (A unique space not necessarily situated in the educational centre)

Store with an area of at least 120 m² (A unique space not necessarily situated in the educational centre)

Professional profile of teaching staff:

1. Knowledge and command of techniques related to work at height in trees, which should be accredited in one of the following ways:

- An academic qualification as a Technical Engineer or a similar type at higher level and related to this professional field.
- Professional experience of at least 3 years in the competences related to this learning module.

2. Accredited pedagogical competence in accordance with the relevant authority's regulations.

LEARNING MODULE 3

Repopulation of inland aquatic species and the conservation and improvement of their habitat

Level: 2

Code: MF1473_2

Related with the CU: UC1473_2 - To carry out repopulation work on inland aquatic species and the conservation and improvement of their habitat.

Duration (hours): 120

State: BOE Official State Gazette

Capacities and assessment criteria

C1: Work on the restocking and upkeep of inland aquatic populations while following established procedures and applying suitable techniques in line with each species and release place.

AC1.1 Describe the main river and lake ecosystems and their differential features.

AC1.2 Describe the features of fish and crustacean species existent in inland waters and particularly in fish farms and crayfish farms.

AC1.3 Explain the process, basics and techniques for electric fishing and other harvesting techniques as well as handling and resuscitation techniques of live specimens which are caught in such a way.

AC1.4 List the techniques and protocols for the selection, harvesting and transport of fish and crustaceans from the fish or crayfish farm.

AC1.5 Explain the main procedures and protocols for the release of fish/crustaceans in order to obtain the best adaptation to the receiving environment.

AC1.6 Describe the procedures and protocols to locate the source of mass fish death in the inland aquatic habitat and the taking of samples of water and dead individuals with a view to carrying out their removal and elimination.

AC1.7 Describe the means, equipment, machinery and tools necessary for the restocking and upkeep of inland aquatic populations.

AC1.8 Describe the regulations in force and the occupational risk prevention plan, adhere quality and profitability criteria, respecting the environment, the specific regulations regarding the activities to be carried out, while attempting to avoid causing stress or harm to animals during the restocking and upkeep of inland aquatic populations.

AC1.9 In a practical case study on the restocking and upkeep of inland aquatic populations:

- Identify the different species and gender, age bracket and/or egg stage of fish or crustaceans cultivated in a fish or crayfish farm.
- Put into practice the process of electric fishing and other methods while following established safety and operating protocols handling techniques or where necessary, resuscitation techniques.
- Select optimum specimens in both quality and quantity in fish farms.
- Sort and transport the selected animals.
- Select a place for their release and carry out the process while applying protocols of adaptation to the environment which guarantee the greatest success.
- Carry out the release process.

- File a report on the characteristics of caught individuals.
- Find outbreaks of mass fish deaths.
- Select, handle and maintain equipment, means, machinery and tools.
- Perform all operations in line with regulations in force and the occupational risk prevention plan, while following criteria for quality and profitability as well as respecting the environment and the specific regulations regarding the work to be undertaken.

C2: Apply conservation and improvement techniques to the riverbed and watercourse, using appropriate methods for the river stretch or the body of inland water's features.

AC2.1 Describe the reproduction processes of the main inland aquatic species.

AC2.2 Describe the factors which determine the potentiality of a particular river stretch from the point of view of its use for reproduction, pointing out the main problems which may prevent it (remains caused by floods, illegal effluents, spills and suchlike).

AC2.3 Recognise the plant species of each watercourse and how they affect the life of inland aquatic fauna and invasive or harmful species

AC2.4 Explain techniques for pruning and cutting vegetation in the watercourse and removal or control of invasive fauna.

AC2.5 Enumerate the main types of fish ladders, fishways and fish counters as well as safety features for aquatic fauna (such as grids, grates and similar), the grounds for their functioning, conservation and upkeep, and the circumstances which may limit their effectiveness or put at risk the lives of species which use them.

AC2.6 Describe processes of formwork and formwork removal, building of frameworks, mixing ratio, placing and curing of concrete, metal soldering, riveting and other building techniques with metal structures.

AC2.7 Describe the simple procedures for the determination of circular flow in a watercourse and the evaluation of flow rate by means of flow meters.

AC2.8 Describe the equipment, means, machinery and tools necessary for work on the conservation of the riverbed and watercourse.

AC2.9 Describe regulations in force and the occupational risk prevention plan while following criteria for quality and profitability as well as respecting the environment and the specific regulations regarding the work to be undertaken, while attempting not to cause undue stress and/or harm to animals during conservation and improvement work on riverbeds and watercourses.

AC2.10 In a clearly characterised practical case study on the conservation and improvement of riverbeds and watercourses:

- Carry out work on the localisation and conservation of spawning grounds as well as installation of equipment to prevent poaching.
- Perform waterflow cleaning operations and treatment of its vegetation.
- Do building work and the verification of functioning and upkeep of fish ladders, fishways and security systems previously studied.
- Mix concrete onsite to a particular mixing ratio.
- Develop work to assess flow rate, the localisation of effluent entry points and water flow extraction points.
- Select, handle and maintain equipment, means, machinery and tools.
- Perform the work in line with regulations in force and the occupational risk prevention plan, while

following criteria for quality and profitability as well as respecting the environment and the specific regulations regarding the work to be undertaken.

C3: Apply conservation and improvement techniques on riversides and their facilities, using the most suitable methods for the features of each river stretch or body of inland water and its use. .

AC3.1 Distinguish between the different tree and bush species in the riverside flora as well as invasive plants which may alter the environment.

AC3.2 Explain work related to waterside vegetation management (pruning, cutting, bush thinning, elimination of invasive species, safe removal of debris and suchlike) and criteria for such activities.

AC3.3 Describe different procedures for the planting of vegetation on riversides and other inland watersides by means of the obtention of cuttings, stakes and canes as well as spacing, bare root planting or with the root ball method, upkeep and repopulation, including replanting.

AC3.4 Describe the characteristics of infrastructure projects related to the adaptation of the environment for fishing, walking, user safety and reviewal programmes for the functionality and upkeep of such facilities.

AC3.5 Enumerate the signage necessary for angling and the safety of fishing stretches as well as their maintenance and reviewal.

AC3.6 Describe processes of formwork and formwork removal, building of frameworks, mixing, placing and curing of concrete, metal soldering, riveting and other building techniques with metal structures as well as the construction of enclosures and other small wooden buildings.

AC3.7 Describe the equipment, means, machinery and tools necessary for conservation and improvement work on watersides and their facilities.

AC3.8 Describe regulations in force and the occupational risk prevention plan while following criteria for quality and profitability as well as respecting the environment and the specific regulations regarding the work to be undertaken, while attempting not to cause undue stress and/or harm to animals during conservation and improvement work on riverbeds, watercourses and their facilities.

AC3.9 In a clearly characterised practical case study on the conservation and improvement of the waterside and its facilities:

- Carry out treatment on existing riparian vegetation
- Select and remove cuttings and stem cuttings from chosen specimens and carry out repopulation work with suitable riparian species and established techniques.
- Install a safety fence and other infrastructure which assist the safety and security of fish farming and crayfish farming.
- Facilitate a stretch of pathway with special emphasis on the upkeep of its infrastructure.
- Install compulsory signposting on a stretch of waterside.
- Mix concrete onsite to a particular mixing ratio.
- Select, handle and maintain the equipment, means, machinery and tools.
- Carry out work in accordance with regulations in force and the occupational risk prevention plan while following criteria for quality and profitability as well as respecting the environment and the specific regulations regarding the work to be undertaken.

C4: Carry out monitoring of rivers and lakes, provide its users with advice and ensure an orderly use of its resources.

AC4.1 Enumerate and distinguish between the different types of fishing, applicable procedures, parts of personal fishing equipment and sport fishing.

AC4.2 Distinguish between the different types of bait used for angling.

AC4.3 Differentiate and describe the potential quality of fishing spots in a river or body of water in line with directly observable physical qualities such as rapidity and depth of water, presence or absence of fishing huts and presence or absence of vegetation or suchlike.

AC4.4 Enumerate the different risk situations (variations in flow, storms, landslides and so on).

AC4.5 Enumerate the different individual safety measures to be taken while practising fishing for sport.

AC4.6 Explain the different reviewal guidelines and procedures for rivers, other bodies of water and their resources and facilities.

AC4.7 Describe the equipment, means, machinery and tools for river and lake environment monitoring.

AC4.8 Describe the regulations in force and the occupational risk prevention plan, adhere to criteria for quality and profitability as well as respecting the environment, the specific regulations regarding the activities to be carried out, while attempting to avoid causing stress or harm to animals during the monitoring of river and lake environments.

AC4.9 In properly characterised practical case study on the monitoring of the river and lake environment:

- Advise possible users of a particular stretch on fishing seasons, techniques, styles, safety standards and so on.
- Check all infrastructure intended for the practice of fishing, users' safety and the conservation of inland aquatic species.
- Check fulfilment of regulations regarding the conservation and orderly use of the riverbed, waterside and water.
- Keep statistical records on fishing, species monitoring and environmental conditions as well of reports of the work performed.
- Fill out a report record, including the essential elements to ensure its aim.
- Select, handle and maintain the equipment, means machinery and tools.
- Carry out the work in accordance with regulations in force and the occupational risk prevention plan while following criteria for quality and profitability as well as respecting the environment and the specific regulations regarding the work to be undertaken.

Capacities whose acquisition should be completed in a real working environment

C2 with respect to all the AC; C3 with respect to AC3.10; C4 with respect to AC4.9; C5 with respect to AC5.9

Other capacities:

- Adapt to the company's work organisation and understand the hierarchical relations within it.
- Interpret instructions properly and become responsible for carrying them out.
- Communicate effectively with the right interlocutor at every moment.
- Follow timetables and the rhythm of work, fulfilling daily performance objectives fixed by the company.
- Display interest in the company's growth forecasts.
- Become involved in the company's quality plan and in the improvement of occupational health and safety.
- Display a respectful attitude to colleagues, procedures and the company's internal regulations. .

Contents

1 Restocking and upkeep of inland aquatic species. .

Main fish stocks and crayfish stocks of inland waters.

Biology and ecology of inland aquatic species. Electric fishing and other capture techniques in fish farms, crayfish farms and in the inland aquatic habitat.

Methods of transport from the fish farm/crayfish farm. Release methods.

Causes of mortality of inland aquatic species.

Water and animal tissue sampling techniques. Techniques for the management of animal remains. Equipment, means, machinery and tools used in restocking and upkeep of inland aquatic populations.

Personal protective equipment (PPE).

2 Conservation and improvement of the watercourse.

Reproduction of inland aquatic species. Potentiality of rivers and inland bodies of water: determining factors and features. Watercourse vegetation. Invasive plant species.

Silviculture treatments: techniques clearing, pruning and treatment of aquatic vegetation. Techniques for the control of invasive flora.

Fish ladders, fishways and fish counters as well as safety features for aquatic fauna. Determination of flows and retention volume. Soldering and riveting techniques.

Equipment, means, machinery and tools used in the conservation and improvement of the waterway or riverbed.

Personal protective equipment (PPE).

3 Conservation and improvement of the waterside and its facilities.

Riparian flora. Invasive plant species. Silviculture treatments: techniques for clearing, pruning and treatment of vegetation. Techniques for controlling invasive flora. Repopulation of waterside species. Repopulation techniques: spacing, bare root planting or with the root ball method and so on. Paths and anglers' pathways. The waterside's infrastructure and facilities:

walkways, huts, etc. Signposting. Soldering and riveting techniques. Equipment, means, machinery and tools used for conservation and improvement of the waterside and its facilities. Personal protection equipment (PPE). .

4 Practice of inland fishing.

Types of fishing. Sport fishing styles. Natural bait and artificial lures. Fishing equipment. Handling of inland aquatic species. Physiography of rivers applied to fishing. Safety measures in the natural environment. Personal protection equipment (PPE).

5 Basic regulations regarding restocking of fish populations and conservation and improvement of the inland aquatic habitat.

Water regulations and spill control. Regulations regarding inland fishing. Regulations for the protection of flora and fauna species and in the inland aquatic habitat. Occupational risk prevention regulations. Environmental regulations. Regulations on environmental impact.

Quality regulations.

Learning context parameters

Spaces and facilities:

1. Knowledge and command of techniques related to the restocking of inland aquatic species and the conservation and improvement of their habitat which should be accredited in one of the following ways:
 - An academic qualification as a Technical Engineer or a similar type at higher level and related to this professional field.
 - Professional experience of at least 3 years in the competences related to this learning module.
2. Accredited pedagogical competence in accordance with the relevant authority's regulations.

LEARNING MODULE 4

Handling and maintenance of forestry tractors

Level: 2

Code: MF1121_2

Related with CU: UC1121_2 - To handle forest tractors and to do their maintenance.

Duration (hours): 120

State: BOE Official State Gazette

Capacities and assessment criteria

C1: Describe the parts of the repair shop, and in a practical case study, put it in good working condition

AC1.1 Describe the most typically used machinery and tools in forestry repair shops.

AC1.2 Relate tools and machinery to the operations in which they are used.

AC1.3 Explain the features of the different types of materials used.

AC1.4 In a perfectly identified forestry repair shop practical case study:

- Check that repair shop is tidy and if not, put it in order.
- Check that tools and machinery are in good working condition and if not, carry out the necessary maintenance work.
- Detect the need for spare parts.
- Carry out the aforementioned work while taking measures regarding occupational risk prevention, while minimising environmental impact and complying with regulations in force.

C2: Explain the handling of machinery and tools in the workshop and in a practical case study, handling them with the required skill to repair minor breakdowns or faults, while following measures regarding health and safety.

AC2.1 Describe the personal protective equipment necessary to work with the different machinery and equipment.

AC2.2 Identify the safety features of each machine in the repair shop.

AC2.3 Explain how each machine works and describe work quality criteria.

AC2.4 In a perfectly described practical case study about the breakdown of a forestry tractor:

- Check that the personal equipment necessary to work with the machinery to be used is in a good state and should it not be, discard it.
- Check that the safety features of the machinery are in a perfect state.
- Handle the machinery and tools with sufficient skill to produce quality work.
- Do the aforementioned work in line with occupational risk prevention measures while minimising environmental impact and following regulations in force.

C3: Explain how engines work and in a practical case study, disassemble and assemble them.

AC3.1 Explain the workings of the different types of engines used in forestry tractors.

AC3.2 Describe engine parts.

AC3.3 Explain the features of different engines.

AC3.4 Explain the different engine settings and how they are done for good performance.

AC3.5 In a perfectly described practical case study about a forestry tractor engine:

- Determine its features.
- Identify its parts.
- Disassemble it with suitable tools and place the parts in an orderly manner.
- Clean the parts which need cleaning.
- Assemble the engine in the right order and with the required screw tightness.
- Make the necessary checks and adjustments in line with the manufacturer's guidelines.
- Do the aforementioned work in line with occupational risk prevention measures while minimising environmental impact and following regulations in force.

C4: Describe the regular maintenance operations necessary for tractors and in a practical case study, perform them in line with the user manual's instructions.

AC4.1 Explain the different components and working of the power system.

AC4.2 Explain the different parts and working of the cooling system.

AC4.3 Point out the tractor's greasing points and how to carry out greasing.

AC4.4 Explain the working and the components of the tractor's electrical system.

AC4.5 Describe the air filter systems.

AC4.6 Describe the tractor's transmission system.

AC4.7 Explain how the hydraulic system works.

AC4.8 Describe the different features of wheeled tractors and crawler tractors.

AC4.9 In a perfectly described practical case study about a forestry tractor which requires regular maintenance:

- Interpretar el manual de instrucciones del tractor.
- Localizar en el tractor el lugar en el que se va a actuar.
- Seleccionar la herramienta y/o máquina necesaria
- Extraer el elemento o pieza deteriorados.
- Subsana el problema o reemplazar los elementos o piezas por unos nuevos.
- Montar de nuevo las piezas o en su caso las de sustitución.
- Cuando sea necesario reponer líquidos, respetar los niveles recomendados.
- Comprobar que todo funciona correctamente.
- Tratar según la normativa los residuos o subproductos resultantes.
- Cubrir un parte de mantenimiento anotando las operaciones realizadas e incidencias observadas.
- Ejecutar las labores anteriores adoptando las medidas de prevención de riesgos laborales, minimizando los impactos ambientales y respetando la normativa aplicable.

C5: Explain the control features and tractor handling techniques and in a practical case study, handle them.

AC5.1 Describe a tractor's control features and indicators.

AC5.2 Explain the various adjustment procedures.

AC5.3 Explain tractor handling techniques.

AC5.4 Explain the specific highway code for driving forestry tractors.

AC5.5 Describe the different attachment methods for implements and/or machinery.

AC5.6 Explain different first aid techniques to be applied in the event of an accident.

AC5.7 In a perfectly identified practical case study on the handling of a forestry tractor with an implement or machinery attached:

- Check that the tractor is in a good working condition.
- Attach an implement or machine which is suitable for the work to be carried out.
- Prepare the equipment to be driven on a public road in line with the highway code.
- Check the controls and make the necessary adjustments to perform the work at hand.
- Manoeuvre with the skill necessary to obtain a high quality outcome.
- Do the aforementioned work in line with occupational risk prevention measures while minimising environmental impact and following regulations in force.

Capacities whose acquisition should be completed in a real working environment

C1 with respect to AC1.4; C2 with respect to AC2.3; C3 with respect to AC3.5; C4 with respect to AC4.9; C5 with respect to AC5.7.

Other capacities:

Adapt to the company's work organisation and understand the hierarchical relations within it.

Interpret instructions properly and be responsible for carrying them out.

Communicate effectively with the right interlocutor at every moment.

Follow timetables and the rhythm of work, fulfilling daily performance objectives fixed by the company.

Display interest in the company's growth forecasts

Become involved in the company's quality plan and in the improvement of occupational health and safety.

Display a respectful attitude to colleagues, procedures and the company's internal regulations.

Contents

1 The forestry repair shop

Spaces and necessary furnishing. Organisation. Tools. Measuring devices and equipment.

Vice. Greasing equipment. Riveter. Emery cloth. Drill. Grinder. Saws.

Sander. Part cleaning machinery. Soldering machines and equipment. Pneumatic air compressor and equipment.

Preparation of equipment maintenance. Spare and replacement parts. Waste and scrap disposal. Signage. Individual equipment. Procedure in the event of fire. Health and safety measures. Environmental and specific regulations.

2 Engines

Features and operation. Parts. Adjustment. Power system. Cooling system. Greasing system. Ignition system. Air filters. Consumption. Power.

3 Tractors

Types: features and applications. Components: chassis, transmission, hydraulic system, electrical system, steering, brakes, wheels, chains, control panel. Most common breakdowns. Regular maintenance. Service life. Hourly labour costs. Handling: attachment of equipment or machinery, control and handling devices, safety elements, risk situations, basic sanitary techniques.

Learning context parameters

Spaces and facilities:

A 90 m² forestry repair shop

Multipurpose classroom of at least 2 m² per student.

Premises: Minimum area of 1,000 ares (wooded ground) (A unique space not necessarily situated in the educational centre)

Store with an area of at least 120 m² (A unique space not necessarily situated in the educational centre)

Professional profile of teaching staff:

1. Knowledge and command of techniques related to the handling and maintenance of forestry tractors, which should be accredited in one of the following ways:

- An academic qualification as a Technical Engineer or a similar type at higher level and related to this professional field.
- Professional experience of at least 3 years in the competences related to this learning module.

2. Accredited pedagogical competence in accordance with the relevant authority's regulations.



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FOR MORE INFORMATION

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