



Republic of Rwanda
Ministry of Education



RTB | RWANDA
TVET BOARD

WOOD WORKING MACHINES OPERATION AND HAND TOOLS USE

WOTMH301

OPERATE WOOD WORKING MACHINES AND USE HAND TOOLS

Competence

RQF Level: 3

Learning Hours



Credits: 4

Sector: Agriculture and Food Processing

Trade: Wood Technology

Module Type: Specific

Curriculum: AFPWOT3002- TVET Certificate 3 in Wood Technology

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Purpose statement	This module describes the knowledge, skills and attitudes required to operate woodworking machines and use hand tools. The students should be able to prepare machines and hand tools for the work, put wood working machines in operation and use hand tools and keep the equipment in good condition. It is designed for students pursuing TVET certificate III in wood technology. Graduates at this level will have knowledge and skills for initial work, community involvement and/or further learning.					
Delivery modality	Training delivery		100%	Assessment		Total 100%
	Theoretical content		30%	Formative assessment	30%	50%
	Practical work:		70%		70%	
	• Group project and presentation	20%				
	• Individual project /Work	50%	Summative Assessment		50%	

Elements of Competency and Performance Criteria

Elements of competency	Performance criteria
1. Prepare machines and hand tools for the work	1.1. Workplace health and safety requirements are properly observed on time as they include ventilation requirements and personal protection needs throughout the work
	1.2. Machines and hand tools are appropriately selected and inspected for quality
	1.3. Safety requirements of machines and hand tools are done respectively before, during and after use, this includes emergency stops, gauges, guards and controls
2. Put wood working machines in operation and use hand tools	2.1. Procedure for machine start-up is appropriately done in accordance with manufacturers' Instructions
	2.2. Machine is properly operated and hand tool properly used in accordance with its designed capacity and purpose, tooling requirements and to manufacturers' recommendations
	2.3. Deficiency in the machine operation and hand tool use is properly identified and reported to appropriate persons
3. Keep the equipment in good condition	3.1. Waste and scrap are properly removed following workplace procedures
	3.2. Equipment are correctly cleaned and inspected for serviceable condition in accordance with workplace procedures
	3.3. Equipment are properly stored in regard of safety, location and standard operational procedures and manufacturers' recommendations

Course content

Learning outcomes	At the end of the module the learner will be able to: <ol style="list-style-type: none"> 1. Prepare machines and hand tools for the work 2. Put wood working machines in operation and use hand tools 3. Keep the equipment in good condition
Learning outcome 1: Prepare machines and hand tools for the work	Learning hours: 10

Indicative content
<ul style="list-style-type: none"> • Workplace health and safety requirements for individuals <ul style="list-style-type: none"> ✓ Identification of source of hazards. ✓ Description of common woodworking hazards. ✓ Application of basic safety rules for wood working machines. • Preparation of machines and hand tools <ul style="list-style-type: none"> ✓ Identification of different hand tools. ✓ Identification of different wood working machines. ✓ Checking operation parts of wood working machines and hand tools. ✓ Filling of the machine inspection template • Safety requirements of machines and hand tools before, during and after use <ul style="list-style-type: none"> ✓ Application of safety measures in operating wood working machines and using hand tools. <ul style="list-style-type: none">  Wear PPEs  Clean working area  Types of PPEs  Maintenance of PPE

Resources required for the learning outcome

Equipment	Wood working machines: <ul style="list-style-type: none"> • Surface/Thickness Planer • Table Saw • Router • Band saw
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	<ul style="list-style-type: none"> • Wood Lathe • Handheld Sanders • Nail Gun • Grinding Machine • Jig Saw • Mortise machine • Tenon machine <p>P.P.Es:</p> <ul style="list-style-type: none"> • Gloves • Helmets • Nose masks • Overalls • Safety boots • Ear muffs • Goggles
Materials	<ul style="list-style-type: none"> • Timber • Nails • Screws
Tools	<ul style="list-style-type: none"> • Hand saws • Power saws • Planes • Sanders • Files • Hammer • Mallet • Drill • Screw Gun • Tape Measure • Square • Workbench
Facilitation techniques	<ul style="list-style-type: none"> • Group discussion • Trainer guided
Formative assessment methods	<ul style="list-style-type: none"> • Written assessment • Performance assessment

Indicative content

- **Procedure for machine start-up**
 - ✓ Identification of the on and off switch
 - ✓ Checking the oil levels of machines
 - ✓ Clearing the working area.
- **Operating machines and using hand tools**
 - ✓ Description of machine guards
 - ✓ Adjusting Machine guards following guidelines
 - ✓ Adjusting machine parts following guidelines
 - ✓ Setting different tools e.g. saws, planes.
 - ✓ Speed control and setting
 - ✓ Feeding procedures
- **Identifying and reporting deficiency in the machine operation and hand tool use**
 - ✓ Identifying change in sound produced by the machines
 - ✓ Identifying abnormal cutting patterns in hand tools
 - ✓ Identifying abnormal vibrations in machines.
 - ✓ Description of maintenance types

Resources required for the indicative content




Equipment

Wood working machines:

- Surface/Thickness Planer
- Table Saw
- Router
- Band saw
- Wood Lathe
- Handheld Sanders
- Nail Gun
- Grinding Machine
- Jig Saw
- Mortise machine
- Tenon machine

	<ul style="list-style-type: none"> ✓ P.P.Es: <ul style="list-style-type: none"> • Gloves • Helmets • Nose masks • Overalls • Safety boots • Ear muffs • Goggles
Materials	<ul style="list-style-type: none"> • Timber • Nails • Screws
Tools	<ul style="list-style-type: none"> • Hand saws • Power saws • Planes • Sanders • Files • Hammer • Mallet • Drill • Screw Gun • Tape Measure • Square • Workbench
Facilitation techniques	<ul style="list-style-type: none"> • Practical exercise
Formative assessment methods	<ul style="list-style-type: none"> • Written assessment • Performance assessment • Product based assessment

Indicative content

- **Removing waste and scrap**
 - ✓ Identification of waste generated from operation of wood working machines and using hand tools.
 -  Sawdust
 -  Wood chips
 -  Wood shavings
- **Cleaning equipment and inspection for serviceable condition**
 - ✓ Identification of machine parts to be cleaned.
 - ✓ Identification of tools to be cleaned
 - ✓ Identification of cleaning tools and materials
 - ✓ Procedure of cleaning machines and tools.
- **Storing equipment**
 - ✓ Preparation of storage areas for hand tools and equipment.
 - ✓ Identification of proper storage for hand tools.

Resources required for the indicative content

Equipment	<ul style="list-style-type: none"> • Personal Protective Equipment
Materials	<ul style="list-style-type: none"> • Grease • Oil
Tools	<ul style="list-style-type: none"> • Brushes
Facilitation techniques	<ul style="list-style-type: none"> • Lectures • Demonstration and simulation • Individual and group work • Practical exercise • Individualized • Trainer guided • Group discussion • etc
Formative assessment methods	<ul style="list-style-type: none"> • Written assessment • Oral presentation • Performance assessment

- Product based assessment
- Project based assessment
- Etc

Integrated/Summative assessment

Integrated situation

MAGIC TIMBER Ltd is a company based in Kamonyi District and deals in production of wooden furniture. The company has procured new wood working machines and tools for their wood workshop and wants to hire you as a wood technologist to operate the machines. Before they hire you, you have to demonstrate that you can operate the following wood working machines and be able to use properly the below hand tools.

Wood working machines	Hand tools
1. Surface/Thickness Planer	1. Hand saws
2. Table Saw	2. Power saws
3. Router	3. Planes
4. Band saw	4. Sanders
5. Wood Lathe	5. Files
6. Handheld Sanders	6. Hammer
7. Nail Gun	7. Mallet
8. Grinding Machine	8. Drill
9. Jig Saw	9. Screw Gun
10. Mortise machine	10. Tape Measure
11. Tenon Machine	11. Square
	12. Workbench

All the tasks required are described as follows:

- ✓ Prepare machines and hand tools for the work
- ✓ Put wood working machines in operation and use hand tools
- ✓ Keep the equipment in good condition

You have 4 hrs maximum.

All required tools, equipment and materials/ consumables are available.

Resources:

Tools	<ul style="list-style-type: none"> ✓ Hand saws ✓ Power saws ✓ Planes ✓ Sanders ✓ Files
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	<ul style="list-style-type: none"> ✓ Hammer ✓ Mallet ✓ Drill ✓ Screw Gun ✓ Tape Measure ✓ Square ✓ Workbench
Equipment	<ul style="list-style-type: none"> ✓ Wood working machines: ✓ Surface/Thickness Planer ✓ Table Saw ✓ Router ✓ Band saw ✓ Wood Lathe ✓ Handheld Sanders ✓ Nail Gun ✓ Grinding Machine ✓ Jig Saw ✓ Mortise machine ✓ Tenon Machine ✓ P.P.E ✓ Gloves ✓ Helmets ✓ Nose masks ✓ Overalls ✓ Safety boots ✓ Ear muffs ✓ Goggles
Materials/ Consumables	<ul style="list-style-type: none"> ✓ Timber ✓ Nails ✓ Screws

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
Learning outcome 1: Prepare machines and hand tools for the work (25%)	1.1. Workplace health and safety requirements are properly observed on time as they include ventilation requirements and personal protection needs throughout the work	All Workplace health and safety requirements are properly observed.			10
	1.2. Machines and hand tools are appropriately selected and inspected for quality	Machines and hand tools are appropriately selected and inspected for quality			10

	1.3. Safety requirements of machines and hand tools are done respectively before, during and after use, this includes emergency stops, gauges, guards and controls	Safety requirements of machines and hand tools are followed			10
Learning outcome 2: Put wood working machines in operation and use hand tools (50%)	2.1 Procedure for machine start-up is appropriately done in accordance with manufacturers' Instructions	Procedure for machine start-up is appropriately done: Machine switched on properly			15
	2.2. Machine is properly operated and hand tool properly used in accordance with its designed capacity and purpose, tooling requirements and to manufacturers' recommendations	Machine operated properly and hand tools used appropriately			15
	2.3. Deficiency in the machine operation and hand tool use is properly identified and reported to appropriate persons	Machine deficiencies correctly identified and reported			10
Learning outcome 3: Keep the equipment in good condition (25%)	3.1. Waste and scrap are properly removed following workplace procedures	Waste and scrap properly removed from the workplace.			10
	3.2. Equipment are correctly cleaned and inspected for serviceable condition in accordance with workplace procedures	Machines and hand tools are properly cleaned and inspected for serviceable condition			10
	3.3. Equipment are properly stored in regard of safety, location and standard operational procedures and manufacturers' recommendations	Machines and hand tools are properly stored.			10
Total marks					100
Percentage Weightage					100%
Minimum Passing line % (Aggregate): 70%					