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Training Organisation Guide (ToG)
for
TVET CERTIFICATE III in RENEWABLE ENERGY CURRICULUM

June 2021

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Part 1: Pedagogical organisation

1. Presentation of the training programme

1.1. The qualification

This qualification prepares individuals to integrate in renewable energy as an Domestic electrical installer, Solar water heater and PV system installer and an Improved stove and Briquette maker. The individuals with this qualification can enter the TVET Certificate IV in renewable energy in order to be equipped with the necessary competences to work as as the renewable energy operator, the renewable energy maintenance technician.

1.2. Minimum Entry requirements

The minimum entry requirement to this qualification is to be physically and mentally fit with broad knowledge, skills and attitude of renewable energy background.

Commented [F1]: To be aligned with general information of curriculum

2. The training programme

2.1 Information about competencies

No	Code	Complementary competencies	Credit
1	CCMOL001	Describe the occupation and learning process	3
2	CCMHE301	Maintain SHE at workplace	3
3	CCMCL301	Apply computer literacy	3
4	CCMWC301	Communicate effectively at workplace	3
5	CCMEN301	Communicate simply using English in familiar situations	3
6	CCMKN301	Gukoresha ikinyarwanda kiboneye	3
7	CCMFR301	Pratiquer les activités de communication en Français dans le métier	3
8	CCMBC301	Create a business	3
9	CCMIA301	Integrate the workplace	30
Total			54

	No	Code	Core competencies	Credit
GENERAL	1	ELTFE302	Apply fundamental of electricity and electronics	8
	2	GENAM301	Apply Algebra and Trigonometry	10
	3	GENPHY301	Apply general physics	4
SPECIAL	4	ELTED302	Perform domestic electrical drawing	5
	5	ELTPPS302	Install domestic electrical protection systems	8

6	RENCS301	Apply basics construction skills	6
7	ENGBM301	Make briquette	9
8	RENDP301	Apply Basic Domestic Plumbing Skills	5
9	ENGEL301	Perform domestic electrical installation	15
10	RENIS301	Make improved cooking stove	5
11	RENPV301	Install Photo Voltaic Home System	8
12	RENSW301	Install Solar Water Heater	5
Total			88

3. Human resources

3.1. Trainers' qualifications and competences (Trainers' profile)

No.	Modules	Qualification	Field or training experience	Technical teaching experience	Languages skill	ICT skills.
1.	FUNDAMENTAL OF ELECTRICITY AND ELECTRONICS	A0 in Electrical Engineering/ Electrical Power Engineering /Renewable energy/Electromechanical engineering A1 in Electrical Engineering/ Electrical Power Engineering/Alternative energy /Renewable energy/Mechatronics and	A0 no training experience required A1 1year of training experience	Training on pedagogy(CBT&CBA) or training in field is an added advantage	Fluent in English; French is an added advantage	Microsoft word Microsoft excel Microsoft power point Internet exploration

		Electromechanical engineering				
2.	ALGEBRA AND TRIGONOMETRY	<ul style="list-style-type: none"> Bachelor's degree in Mathematics / Physics with A1 diploma in Mathematics / Physics 	<p>A0 no training experience required</p> <p>A1 1years of training experience</p>	<p>Training on pedagogy(CBT&CBA) or training in field is an added advantage</p>	<p>Fluent in English; French is an added advantage</p>	<p>Microsoft word</p> <p>Microsoft excel</p> <p>Microsoft power point</p> <p>Internet exploration</p>
3.	GENERAL PHYSICS	<ul style="list-style-type: none"> Bachelor's degree in physics A1 in physics 	<p>- A0 no training experience required</p> <p>- A1 1year of training experience</p> <p>-</p>	<p>Training on pedagogy(CBT&CBA) or training in field is an added advantage</p>	<p>Fluent in English; French is an added advantage</p>	<p>Microsoft word</p> <p>Microsoft excel</p> <p>Microsoft power point</p> <p>Internet exploration</p>

4.	DOMESTIC ELECTRICAL DRAWING	<ul style="list-style-type: none"> • A0 in Electrical Engineering/ Electrical Power Engineering /Renewable energy/Electromechanical engineering • A1 in Electrical Engineering/ Electrical Power Engineering/Alternative energy /Renewable energy/Mechanics and Electromechanical engineering 	<ul style="list-style-type: none"> - A0 no training experience required - A1 1year of training experience - 	Training on pedagogy(CBT&CBA) or training in field is an added advantage	Fluent in English; French is an added advantage	Microsoft word Microsoft excel Microsoft power point Internet exploration CAD applications
5.	DOMESTIC ELECTRICAL PROTECTION SYSTEMS	<ul style="list-style-type: none"> • A0 in Electrical Engineering/ Electrical Power Engineering/ Renewable 	<ul style="list-style-type: none"> - A0 no training experience required - A1 1year of training experience 	Training on pedagogy(CBT&CBA) or training in field is an added advantage	Fluent in English; French is an added advantage	Microsoft word Microsoft excel Microsoft power point Internet exploration CAD applications

		energy/Electromechanical engineering A1 in Electrical Engineering/ Electrical Power Engineering /Alternative energy /Renewable energy/Mechatronics and Electromechanical engineering				
6.	BRIQUETTE MAKING	A0 in Renewable energy/ Alternative energy A1 in Alternative energy /Renewable energy	- A0 no training experience required - A1 no training experience required	Training on pedagogy(CBT&CBA) or training in field is an added advantage	Fluent in English; French is an added advantage	Microsoft word Microsoft excel Microsoft power point Internet exploration CAD applications

7.	BASICS CONSTRUCTION SKILLS	<ul style="list-style-type: none"> - A0 in Renewable energy/ Alternative energy - A0 in Civil engineering - A1 in Renewable energy/ Alternative energy - A1 in Civil engineering - A2 Construction/masonry 	<ul style="list-style-type: none"> - A0 no training experience required - A1 no training experience required - A2 1year training experience required - 	Training on pedagogy(CBT&CBA) or training in field is an added advantage or training in field	Fluent in English; French is an added advantage	<ul style="list-style-type: none"> Microsoft word Microsoft excel Microsoft power point Internet exploration CAD applications
8.	BASIC DOMESTIC PLUMBING SKILLS	<ul style="list-style-type: none"> - A0 in Mechanical engineering - A0 In Water engineering - A1 in Mechanical engineering 	<ul style="list-style-type: none"> - A0 no training experience required - A1 no training experience required 	Training on pedagogy(CBT&CBA) or training in field is an added advantage	Fluent in English; French is an added advantage	<ul style="list-style-type: none"> Microsoft word Microsoft excel Microsoft power point Internet exploration CAD applications

9.	DOMESTIC ELECTRICAL INSTALLATIONS	<ul style="list-style-type: none"> A0 in Electrical Engineering/ Electrical Power Engineering /Renewable energy/Electromechanical engineering A1 in Electrical Engineering/ Electrical Power Engineering/Alternative energy /Renewable energy A2 in electricity 	<ul style="list-style-type: none"> - A0 1year working experience - A1 with 2 years working experiences - A2 with 3 years working experiences 	<p>Training on pedagogy(CBT&CBA) or training in field is an added advantage</p>	<p>Fluent in English; French is an added advantage</p>	<ul style="list-style-type: none"> Microsoft word Microsoft excel Microsoft power point Internet exploration CAD applications
10.	IMPROVED COOKING STOVE CONSTRUCTION	<ul style="list-style-type: none"> - A0 in Renewable energy/ Alternative energy - A0 in Civil engineering - A0 in Mechanical engineering - A1 in Renewable energy/ 	<ul style="list-style-type: none"> - A0 no training experience required - A1 no training 	<p>Training on pedagogy(CBT&CBA) or training in field is an added advantage</p>	<p>Fluent in English; French is an added advantage</p>	<ul style="list-style-type: none"> Microsoft word Microsoft excel Microsoft power point Internet exploration CAD applications

		<p>Alternative energy</p> <ul style="list-style-type: none"> - A1 in Civil engineering - A1 in Mechanical engineering 	<p>experience required</p>	<p>or training in field</p>		
11.	<p>PHOTO VOLTAIC HOME SYSTEM INSTALLATION</p>	<p>A0 in Electrical Engineering/ Electrical Power Engineering /Renewable energy/Alternative energy/A1 in Electrical Engineering/ Electrical Power Engineering/Alternative energy /Renewable energy</p>	<ul style="list-style-type: none"> - A0 no training experience required - A1 1years training experiences 	<p>Training on pedagogy(CBT&CBA) or training in field is an added advantage</p>	<p>Fluent in English; French is an added advantage</p>	<p>Microsoft word Microsoft excel Microsoft power point Internet exploration CAD applications</p>
12.	<p>SOLAR WATER HEATER INSTALLATION</p>	<ul style="list-style-type: none"> - A0 in Renewable energy/ Alternative energy - A0 in Mechanical engineering - A1 in Renewable energy/ Alternative energy - A1 in Mechanical engineering 	<ul style="list-style-type: none"> - A0 no training experience required - A1 1year of training experience 	<p>Training on pedagogy(CBT&CBA) or training in field is an added advantage</p>	<p>Fluent in English; French is an added advantage</p>	<p>Microsoft word Microsoft excel Microsoft power point Internet exploration CAD applications</p>

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Part 2: resources organisation

1. Material

1.1. Category 1: Machines, equipment and accessories

Name and description	Specifications	Quantity	Type of room	Module code
Ladder	Two sections Minimum Height: 1.8m Maximum Extension: 3.7m Maximum Capacity: 150kg	5	Workshop/ Site	ELTPPS302 ENGEL301 RENPV301 RENSW301 ELTFE302
Hand drilling machines	Voltage: 220V, 240V Drill Type: Impact Drill Speed Type: Variable Speed Power Source: Electric Power: 900W	5	Workshop/ site	ENGEL301 RENPV301 RENSW301 RENIS301 RENDP 301
Angle Grinder machine	Operating Voltage : 230V 50Hz Power minimum : 950 W Speed (No Load) minimum : 11000 rpm Diameter Of Wheel minimum: 125 mm	2	Workshop/site	RENPV301 RENSW301 RENIS301

	Wheel Diameter in inch minimum: 9 inch No Load Speed minimum: 6500 rpm Wheel Diameter minimum: 230 mm Spindle Size minimum: M14 Power Input minimum: 2000 W	3		
Welding machine	Technology: Inverter Based, MOSFET Based Phase: Single Phase Frequency (Hz): 50/60 Input Supply (V): AC220V±15% Rated Input Current (A): 43.5	5	Workshop/site	RENPV301 RENSW301
Extension cable	Length: 30-50 m Four socket outlets, two poles and ground electrode Current : 10-16A Voltage:220-250V Power minimum: 3000W Size minimum: 3x2,5mm ² .	3	Workshop/ site / labo	ENGEL301 RENPV301 RENSW301 RENIS301 RENDP 301
Bench vice	Size in inches 4 Width of jaws 100 mm Opening of jaws 115mm Depth of jaws 60 mm Height overall 90mm Length overall 315mm Width overall 185mm	25	Workshop	RENIS301 RENDP 301

Hinged Pipe vice	Size : 1/8" - 2" (3 - 50mm) Three fixing holes Secure bench mounting Replaceable jaws	10	Workshop	RENSW301 RENDP 301
Pipe vice stand	Construction: Solid cast 180° pivoting crank handle Plated steel screws with slide bar	10	Workshop	RENSW301 RENDP 301
Plastic Pipe heat gun	Material: Plastic Dimension: 240mm x 50mm x 210mm ; Working temperature: 60 – 550°C °C ; Airflow: 350 – 550 l/min ; Heat-up time: 1 min ; Cord Length: 2 m ; Overheat protection Input power minimum: 1800w Temperature Setting: 300-500 degree Celsius Heat isolation cap	5	Workshop/site	RENSW301 RENDP 301
Manual PPR pipe Welding Machine	Material: Aluminum Voltage: 180 V to 240 V Usage Welding Plastic Pipes Welding size: 20 mm, 25 mm, 32 mm, 40 mm, 50 mm, 63 mm Temperature: 260 Degree C to +-5 Degree	5	Workshop/site	RENSW301 RENDP 301
Thread cutter machine	Size : ½ - 2 (inch) Voltage : 230-250 Volt / 50 Hz Power minimum: 750 W Speed (rpm)minimum: 27 rpm Dies Including (Inch.): ½ - ¾, 1 - 2	2	Workshop	RENSW301 RENDP 301

Hydraulic Pipe bender machine	Quick-change shoes for pipe of 1/2", 3/4", 1", 1-1/4", 1-1/2" and 2" diameter Bending bars can be adjusted to distance of 8-1/2", 11-1/4", 12", 16-3/4", 19-1/2", and 22-1/4". The steel frame is 24" wide, 6-1/2" deep and 21-1/2" high. Bend up to 180 degrees. Jack capacity: 13-1/4" minimum, 22-3/4" maximum, 9-1/2" stroke.	2	Workshop/site	RENSW301 RENDP 301
Ratchet die stock kit (12 pcs)	1 reversible Ratchet - drive die wrench Thread: 1/2 "- 3/8" - 3/8 "- 3/4" - 1 "- 1 1/4" 1 pliers 1 pipe cutter 1 Water pump wrench 1 Roll sealing tape	5	Workshop/site	RENSW301 RENDP 301
Manual rolling machine	Max. Thickness of sheet metal 3mm Roller diameter 200 mm	2	Workshop	RENIS301
Anvil GZ50KGG	Material: Alloy Steel Weight: 50 kg	5	Workshop	RENIS301
Electrical workbenches	Made in wood Durability against corrosion and rust;	25	workshop	ENGEL301

	Size: H750/610*W1400/1600/1800*D700mm Including: Table Supporter (metal), tabletop, Back Panel, Suspension Rail,Power sockets Rail.			
Solar Panel Monocrystalline	Maximum Power/Pmax(W) 50W Dimensions: 22.59 X 20.39 X 1 inch Open Circuit Voltage: 21.81V Short Circuit Current: 2.99A Max Power Voltage: 18.39V Max System Current: 2.79A	25	Workshop/site	RENPV301
Solar Panel polycrystalline	Maximum Power/Pmax(W) 50W Dimensions: 22.59 X 20.39 X 1 inch Open Circuit Voltage: 21.81V Short Circuit Current: 2.99A Max Power Voltage: 18.39V Max System Current: 2.79A	25	Workshop/site	RENPV301
Solar panel Amorphous	Out Peak Power(PM) 50W~100W Power Allowance Range 3%	5	Workshop/site	RENPV301

	<p>Open Circuit Voltage(Voc) 21.5V ,21.8V</p> <p>Max.Power Voltage(Vmp) 17.5V~18V</p> <p>Number of Cells 36</p> <p>Max System Voltage 1000V</p> <p>STC AM1.5,1000w/m2,25°C</p>			
Charge controller	<p>Rated current minimum 20A</p> <p>Fully automated operation and auto 12/24V selection</p> <p>Wide solar input voltage range up to 50V</p> <p>3 pairs of terminals (input, battery, output) for wires up to 6mm²</p> <p>LEDs to indicate charging, battery and load</p> <p>Temperature sensor for automatic compensation (-30mV/C/12V)</p> <p>Over load protection (1.25 times of rated current for 60 sec, 1.5 times of rated current for 5 sec)</p>	25	Workshop/site	RENPV301
Battery	<p>Lithium Ion</p> <p>Battery capacity : 50 Ah</p> <p>Charging voltage : 14.4 V</p> <p>Maximum charging current : 25 A</p> <p>Stand by voltage : 13.8 V</p>	12	Workshop/site	RENPV301
Inverter	<p>Power: 500 - 1000W</p> <p>Output</p> <p>Type: Single</p>	5	Workshop/site	RENPV301

	<p>Size: 250X165X60MM DC to AC 1000w solar power inverter 12v 220v Input Voltage: DC12V/24v/36v/48v (optional) Output Voltage: AC220V/230V/240V Type: DC/AC Inverters Output Frequency: 60Hz/50Hz Product name: DC to AC 1000w solar power inverter 12v 220v Rated power: 1000W</p>			
Solar Cable Entry Box	<p>Material Plastic Size : 2mm² to 6mm²</p>	100	Workshop/site	RENPV301
Cable ties	<p>High resistance nylon Dimensions: 4.8 x 200 mm. Pack of 100 pieces.Maximum</p>	50	Workshop/site	RENPV301
Solar water heater (flat collector)	<p>Tank capacity- 100 Liters. Ideal for 2-3 person with bathroom connection. Normal Pressure (Water Heater Tank and main tank should be on the same level). High density compressed PUF Insulation (50 mm) to store hot water for up to 48 hrs. Collector Fins- Ultrasonic welded with Nalsum Coating. Copper pipe 24 SWG, Aluminium strip minimum 0.20 mm.</p>	4	Workshop/field	RENPV301

	<p>Inner Tank material- C.R.C.A Sheet,1.2 mm.</p> <p>Support Structure- Mild steel with powder coating.</p> <p>Number of panels-1.</p> <p>Electricity saving- 540 units/year.</p>			
Solar water heater (evacuated tube collector)	<p>Usage: Domestic</p> <p>Capacity (LPD): 100</p> <p>Material: Stainless steel 445J1M</p> <p>Insulation: PUF</p> <p>Tube Material: Steel board plating with Zinc</p> <p>No of Tubes/ Fins: 12</p> <p>Tube Length (mm): minimum 1800</p> <p>Tube Thickness (mm): 1.6</p>	4	Workshop/field	RENPV301
Manual press briquette making machine	<p>Thick steel plate: 5 mm</p> <p>Smooth iron concrete reinforcement bars: 12 mm.</p> <p>Mould size : 90 mm high</p> <p>Internal diameter of 5" (127 mm).</p> <p>Number of holes:19</p> <p>Holes size : 12.5 mm (½ inch).</p> <p>Handles size: 10 mm thick.</p> <p>Production capacity: 30 briquettes per hour</p>	12	Field	ENGBM301

Charring drum	Material: Metal Metal Thickness :minimum 1.5 mm Drum shape : cylindrical Height : minimum 1400 mm Diameter : minimum 600 mm Top Cover: Conical shape with chimney	5	Field	ENGBM301
Drawing board	Top Material Type: Metal/ wood/ plastic Mounting Type: Tabletop Shape: Rectangular Size: 20 inches by 26 inches (range)	27	class	ELTED302

1.2. Category 2: Tools and instruments

Name and description	Specifications	Quantity	Type of room	Module code
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Combination pliers	<ul style="list-style-type: none"> • 6" to 8" combination pliers • Chrome vanadium steel • Drop forged & heat treated • Induction hardened cutting edges • Serrated gripping surfaces • IEC 60900 VDE/DIN safety plier 	30	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTFE302
Side cutter pliers	<ul style="list-style-type: none"> • Total length 163 mm • Length of jaws 22 mm • Width of jaws 11 mm • Plier head width 19 mm • Precision cutting edge • VDE-tested to IEC 60900 1000V 	30	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTFE302
Wire stripping pliers (with spring)	<ul style="list-style-type: none"> • 6" wire stripping pliers • Opening spring and V-shape cutting edge • Drop forged & heat treated • Safety ergonomic soft handle • VDE-tested to IEC 60900 1000V 	30	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTFE302
Bent nose pliers	<ul style="list-style-type: none"> • 6 » & 8 » bent nose pliers • Chrome vanadium steel • Drop forged & heat treated • VDE-tested to IEC 60900 1000V • Safety ergonomic soft handle 	5	Workshop	
Long nose plier	<ul style="list-style-type: none"> • Chrome vanadium steel • Drop-forged & heat treated • Induction hardened cutting edges • Serrated gripping surfaces 	30	Workshop/field	ELTPPS302 ENGEL301 RENPV301 ELTFE302

	<ul style="list-style-type: none"> • IEC 60900 VDE/DIN safety pliers 			
Electrician knife	<ul style="list-style-type: none"> • MEK-60 Carbon Steel • Curved Blade, • Hardwood Handle, • Blade Depth 60mm, • Length 195mm 	30	Workshop/field	ELTPPS302 ENGEL301 RENPV301 ELTFE302
Socket wrench	socket size 10mm up to 32mm	3	Workshop	RENPV301 RENSW301
Screwdriver for flat Head	Beta Tools 1202 3 x 60 Screwdriver for flat Head Screws	30	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTFE302
Screwdriver Set In Thermoformed Tray	7pc Slotted Screwdriver Set In Thermoformed Tray.	4	Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301
Phase test Screwdriver	<ul style="list-style-type: none"> • Voltage: AC 100-500V; • Overall Size: 140 x 15mm /5.52 x 0.6 Inch(L*D) • Screwdriver Head Width: 3mm / 0.12 Inch 	30	Workshop/field	ELTFE302 ELTPPS302 ENGEL301 RENPV301
Measuring tape	Steel casing, 5 m, Impact Resistant	30	Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301
Electrician claw hammer	<ul style="list-style-type: none"> • plastic handle, 500 g • durable plastic-alloy jacketing • High-strength fiberglass shaft • Extra-long neck, and narrow striking face 	27	Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301
Ball peen hammer	Weight : 450g or 16 oz Length: 330mm x 13",	30	Workshop	ELTFE302 ELTPPS302

	Forged Steel Head			ENGEL301 RENPV301
Cross hammer	Weight: 0.34 kg Length: 330mm x 13", Forged Steel Head	30	Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301
Plastic hammer	<ul style="list-style-type: none"> • Weight : 800g • Forged hammer with nylon heads • Double faced nylon face diameters 27 mm • Drop forged head, 	30	Workshop	RENIS301
Flat cold chisel	Width 18 mm Length 150 mm	30	Workshop	RENIS301
Cross chisel	Cross-cut chisel 175x17x11 mm	30	Workshop	RENIS301
Plastic pipe cutter	Click pipe cutter Diameter:24 Automatic opening of the jaw	30	Workshop	RENSW301 RENDP 301
Hack saw	Handy saw blade storage Heavy Duty frame 12" 24 TPI Bi-metal blade Adjustable blade	27	Workshop	ENGEL301 RENPV301 RENSW301 ELTPPS302
Electrical pipe conduit bending spring	Material: Carbon steel Size: 20mm,25mm,32mm	10/each	Workshop	ENGEL301 ELTPPS302 RENPV301
Spirit level	Made in aluminium With vertical, horizontal and diagonal indicators Length: 40-50cm Temperature: -20 to 130 degrees F	27	workshop	ENGEL301 RENPV301 RENSW301 ELTPPS302 RENDP 301 RENIS301

	Accurate: ± 0.5 millimeters/meter, or 0.005 inches/inch or .029 degrees.			RENCS301
Try square	Material: stainless steel Size: 200x300x2.0mm / 400x600x2.0mm	27	Workshop	ENGEL301 RENPV301 RENSW301 ELTPPS302 RENDP 301 RENIS301 RENCS301
Digital multimeter	<ul style="list-style-type: none"> - Auto range - Data hold - LCD Display with bar graph allowing analog measurements - DC Voltage: 326mV, 3.26/32.6/326/1000V - AC Voltage: 3.26/32.6/326/700V - DC current: 0.326/3.26/32.6/326mA, 10A - AC current: 0.326/3.26/32.6/326mA, 10A - Resistance: 326/3.26K/32.6K/326K/3.26M/32.6MΩ - Capacitance: 326n/32.6μF - Continuity checking with buzzer - Transistor hFE Test Power: 6F22(9V) x 1	12	Workshop	ENGEL301 RENPV301 ELTPPS302 ELTFE302
Analogue multimeter	<ul style="list-style-type: none"> - DC Voltage: 0-0.25V/2.5V/25V/250V/600V - AC Voltage: 0-0.25V/2.5V/25V/250V/600V - DC Current: 0-25μA /25mA/250mA/10A - AC Current: 0-25μA /25mA/250mA/10A 	12	workshop	ENGEL301 RENPV301 ELTPPS302 ELTFE302

	<ul style="list-style-type: none"> - Resistance: 0-200Ω/2kΩ/20kΩ/200kΩ/2MΩ/20MΩ - Capacitance: 0+2nF/20nF/200nF/2μF/20μF - Frequency measurement: 0-20KHz - Temperature measurement: -40°C to 150°C - Power source: 9V IEC 6F22 battery 			
Digital Insulation Tester	<ul style="list-style-type: none"> - Features: - Easy and correct readout - Wide measurement range - High stability and reliability - LCD display for low power consumption and clear readout - Light weight and compact construction for easy operation - Auto power off and asleep mode - Over range indication: MSD "1" display - Power supply: 6x AA battery (included) - Power Consumption: unload consumption is less than 300 mW. - Operating Temperature: 0 ~ 40 °C - Operating Humidity: 30% ~ 85% RH - Dimension: 175mm (L) x 110mm (W) x 70mm (D) - - Electrical Specifications: - Test Voltage 250 V ± 10% 500 V ± 10% 1000 V ± 10% - Range 0.1 MΩ - 20 MΩ 0.1 Ω - 50 MΩ 0.1 MΩ - 100 MΩ - 20 MΩ - 500 MΩ 50 MΩ - 1000 MΩ 100 MΩ - 2000 MΩ 	3	Workshop	<p>ENGEL301 RENPV301 ELTPPS302 ELTFE302</p>

	<ul style="list-style-type: none"> - Accuracy \pm (4% of reading + 2d) - Short current 1.7 mA 1.7 mA 1.4 mA - Median Resistance 2 MΩ 2 MΩ 5 MΩ - Jack Position L, E2 L, E2 L, E1 			
DC/AC Digital clamp-on multimeter	<ul style="list-style-type: none"> - AC voltage measurement 0 -600V - AC current measurement 0-400-1000A - DC Voltage measurement 0-40mv-400v-600V - DC Current 0-400A-600A - Resistance 0-200 Ohms-400K-4 M- 40 M Ohms - Capacitance: 40nF-400nF-40uF-4000uF - Frequency: 10Hz-10Khz-1000KHz-10MHz - Diodes Test - Continuity test - Thermometer C/F -50 -150C/ -58F-302F/ 150 -700C/ 302-1292F - Duty Cycle: 0.1% -99.9% - Sensitivity Sine wave 0.60V rms - Max and Min memorized - Data Hold - Back Light (hold for over 2 seconds) 	30	Workshop	<p>ENGEL301 RENPV301 ELTPPS302 ELTFE302</p>
Watt meter	<p>Power Range 100 mW to 10 kW Frequency Range 0.45 MHz to 2.3 GHz VSWR 1.05:1 Max (with Type N connectors) Accuracy \pm5% (full scale) Impedance 50 Ohms Nominal Connectors Type N(F) Accessories: AC adaptor, carrying case, operation manual book.</p>	5	Workshop	<p>ENGEL301 RENPV301 ELTPPS302 ELTFE302</p>

Single phase Energy meter	(1phase) , 220V,5 - (15)A , 50HZ	15	Workshop	ENGEL301 RENPV301 ELTPPS302 ELTFE302
Vernier caliper	-Caliper with dial vernier reading to 0.1 or 0.005mm: $G=(20+1/10\text{mm})\mu\text{m}\geq 50\mu\text{m}$ - Caliper with analogue indication vernier reading to 0.02 or digital indication: $G= G=(22+1/50\text{mm})\mu\text{m}$	12	Workshop	ENGEL301 RENPV301 ELTPPS302 ELTFE302
Lux meter	Display: 3-1/2 digit 18mm LCD; Power: 9V battery; ranges: 0-200/2,000/20,000/200,000 Lux - Accuracy: $\pm 3\% \pm 10$ digits (0-20,000 lux); $\pm 5\% \pm 10$ digits (over 20,000 Lux); Repeatability: $\pm 2\%$; Temperature Characteristic: $\pm 0.1\% \text{C}$; Photo detector type: Silicon Photo; Diode with Filter; Operating temperature: 32-104 degrees F (0-40 degrees C); Sampling rate: 2-3 times per second; Battery life: 200 hours	25	Workshop	ENGEL301 RENPV301 ELTPPS302 ELTFE302
Frequency meter	1. Display : 4 digits LED display red or green) 2. Accuracy : $\pm(0.1\% \text{reading} + 2 \text{digit})$ 3. Standard : IEC51—1 4. Auxiliary power : AC 110V $\pm 10\%$ 50/60Hz AC 220V $\pm 10\%$ 50/60Hz 5. Input signal : AC Voltage, rated signal value: 0-600V (admissible input Voltage error 80%, +100%) 6. Measuring : 0-1M Hz 7. Consumption : <1.8VA 8. Max Signal Consumption : <0.3VA 9. Operating Environment : temperature-	10	Workshop	ENGEL301 RENPV301 ELTPPS302 ELTFE302

	<p>10C°~ +50 C° humidity : ≤85%</p> <p>10. Storage Environment: temperature - 30C°~ +60 C° humidity : ≤70%</p> <p>11. Case: Non-combustible ABS plastic material is used for making JCH series'external case, and PPO plastic material is used for JCH series's base; while Non-combustible PC plastic material is used for making JCH series'external case and base. Both of which will not suffer deformity under long-term use at 70°C and 120°C respectively.</p> <p>12. Insulation Test: over 2000V/min</p>			
Large compasses	<p>1.Rugged 6" pencil compass/divider;</p> <p>2.Fast center wheel adjustment;</p> <p>3.Capped spindle prevents overextension;</p> <p>4.Interchangeable pen, pencil and divider parts for versatility; 5.High-tech design of matte silver upper legs and black fiberglass lower legs; 6.Make circles from 1/8" to 9 1/2"; 7.In two-piece see-through package</p>	30	Workshop	<p>RENIS301</p> <p>RENCS301</p>
Earth resistance tester	<p>Measure Earth Resistance (20/200/2000 ohm ranges)</p> <p>Measures Earth AC Voltage to 200 Vac (40 to 500 Hz)</p> <p>Timed function test turns output off after a 3 to 5 min continuous test</p> <p>2 mA measuring current measures resistance without tripping circuit breakers</p> <p>Data Hold</p> <p>Small & Light Weight</p> <p>Auto Power Off</p> <p>IEC 1010 CAT III 200V / CE</p>	2	Workshop	<p>ENGEL301</p> <p>RENPV301</p> <p>ELTPPS302</p> <p>ELTFE302</p>

	Power Source: 6 "AA" cells Accessories: Instruction Manual, Test Leads, Auxiliary Earth Spikes, Carrying Case and Batteries			
Pipe wrench	Length: 12 inch	25	Workshop/field	RENSW301 RENDP 301
Adjustable wrench	small(up to 3/4 inch) Medium(up to 1 1/4 inch) big (up to 1 1/2 inch)	10/each	Workshop/field	RENSW301 RENDP 301
Water pump plier	Material: Carbon steel forging, Length: 300mm	25	Workshop/ field	RENSW301 RENDP 301

1.3. Category 3: Security materials

N°	Name and description	Specifications	Quantity	Type of room	Module code
1	Goggles	1.Clear lenses, Clear polycarbonate lenses	30	Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301

					RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
2	Mask	Box of 10 disposable type	30	Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENC301 RENDP 301 RENIS301 ENGBM301 ELTED302
3	Ear muffler (Ear plug)	1. Dimensions: 4.3 x 8 x 11 inches; 2. Weigth:10.1 ounces	25	Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301

					RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
4	Gloves	1. Strong stitching, generous fit; 2.For general purpose use	25	Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302

5	Safety helmet	1. Construction type; 2. Fully adjustable internal harness and nape strap for extra comfort	25	Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
6	Safety harness	1. Two D-Rings (Fall Arrest and Climbing) 2. 2-Point Adjustability; 3. 6,300 lb. Polyester Webbing; 4. C/W 1,5 m length With shock absorber	30	Workshop	ELTPPS302 ENGEL301 RENPV301 RENSW301 RENC301 ELTED302
7	Overcoats for instructors	Made in cotton. Medium Size Large Size Extra large	10	Workshop/Class/Lab/ Site	ELTFE302 ELTPPS302 ENGEL301 RENPV301

					RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
	Overall for student	Made in cotton. Medium Size Large Size Extra large	30	Workshop/Class/Lab/ Site	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
8	Safety shoes	1. Brown and black Full Grain Leather Upper; 2.Padded Collar and Tongue; 3.Dual Density Polyurethane Sole Unit; 4.Slip Resistant Sole Unit;	30	Workshop/Lab/ Site	ELTFE302 ELTPPS302 ENGEL301

		5.Antistatic; 6.Energy Absorption Heel; 7.Steel Midsole Unit; 8.200 Joule Steel Toe Cap; 9.Sole unit resistant to oils, acids and alkalis; 10.Heat resistant sole unit to 180°C; 11.EN Level EN345 S1-P; 12.sizes 6 -9			RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
10	First Aid box	With assorted medication for burns and cuts: e.g.: scissors, antiseptic cream, iodine, eyewash, bandages of 2 sizes, plaster, cotton wool; 1.1x Leaflet; 2.60 x Assorted plasters; 3. 8 x Non-woven bandages; 4. 16 x Dressing pads; 5. 12 x Safety pins; 6. 20 x Wipes; 7. 6 x Eye pads; 8. 3 x Pairs of gloves	2	Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
11	Dry chemical extinguishers for class ABC	1.Non corrosive pull pin; 2.Completely rechargeable; 3.Full hand grip for ease of operation; 4.Waterproof stainless steel gauge;	2	Workshop	ELTFE302 ELTPPS302 ENGEL301

		5.Steel valve; 6.Quick release hose; 7.Steel cylinder complete with cylinder skirt; 8.Steel 2 1/2" cylinder (1A-10BC); 9.Cylinder with high corrosion and impact resistant finish (red epoxy); 10.Comes complete with wall bracket; 11.Vehicle bracket optional			RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
12	CO ₂ Extinguishers	Agent: 99% pure CO ₂ gas Cylinder size: D152*H750mm Cylinder thread: PZ 25.4 Bottom shape: flat base Thickness: 5.0mm Valve: Brass body with red middle handle, hanger loop, thread: W21.8*14 Hose: black rubber hose with horn. Length: 110cm Siphon tube:M10*1*680mm Bracket: Red round hook Cylinder painting: 7325 Red painting Weight: 12kg	2	Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
	Spade	Size: 42mm (L) x 37mm (W) and 11mm (T), net weight : 38g. handle:wood	15	field	RENIS301 ENGBM301 RENC301

	Trowel	Dimensions Width:3 to 5 inches Length: 10 to 24 inches .	15	field	RENIS301 ENGBM301 RENCS301
	Plastering trowel	width : 4.5 inches and lengths range from :11" - 16".	15	field	RENIS301 ENGBM301 RENCS301
	Wheel barrow	2-square foot to 6-square foot (.18 to .55 sq. m.) (capacity, 3-square feet (.28 sq. m.)	3	field	RENIS301 ENGBM301 RENCS301
	Machette	Material: MS Handle: Wooden	15	field	RENIS301 ENGBM301 RENCS301
	Center punch	Length : 4" long Diameter : 1/8" (3 mm) diameter tapered point. Material : Hardened and tempered steel	15	field	RENIS301
	Scriber	Dimensions: 6.75 x 3.25 x 2.13 inches	15	field	RENIS301 RENSW301 ELTED302

1.4. Category 4: Consumables and raw materials

Name and description	Specifications	Quantity	Type of room	Module code
One gang one way switch	220-250V /10A Wall mount	60	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Two gangs one way switch	220-250V /10A Wall mount	60	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
One gang Two-way switch	220-250V /10A Wall mount	60	Workshop	ELTPPS302 ENGEL301 RENPV301
Push button N.O/ NC	220-250V /10A W Wall mount	60	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Intermediate switch	220-250V /10A Wall mount	30	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302

One way pull-switch	220-250V /10A Wall mount	20	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Two gang two-way switch	220-250V /10A Wall mount	30	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Timer switch	220-250V /10A	20	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
twilight switch	220-250V /10A	20	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Emergency light	220-250V /10A Economy emergency LED light Maintained operation Backup operation min. 3 hours Light output 85 lumens IP20 rating (Indoor use) Test switch Polycarbonate base 25cm (w) x 8cm (d) x 4cm (h)	20	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Motion Sensor switch	220-250V /10A	20	Workshop	ELTPPS302 ENGEL301 RENPV301

				ELTED302
Wires single core	Copper made 1.5mm ² / 220-250V /16A	20 Rolls	workshop	ELTPPS302 ENGEL301 RENPV301
Wires single core	Copper made 2.5mm ² / 220-250V /25A	20 Rolls	workshop	ELTPPS302 ENGEL301 RENPV301
Electrical bell	220V, 50Hz	15	workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Bulb lamp holders	220V, 50Hz	80	workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Socket outlet+ground	220V, 50Hz	60	workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Connectors	Insulated connectors 1.5mm ² , 2.5mm ²	20 packets	workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Junction box	Plastic	30	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Mounting boxes	Plastic	60	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302

Circuit breakers	10A	25	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Circuit breakers	16A	25	workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Distribution board	Plastic with three lines	15	workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Cable clips	8,10,12,14mm	10 box	workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Bulb lamps	LED, 220V, 50Hz, 7 W	80	workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Fluorescent fitting	220V, 50Hz, 20W	30	Workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Fluorescent tubes	220V, 50Hz, 20W	30	workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
Self tapping Screws	Length Imperial 3/8in Length Metric 9.5mm Thread Size UTS No. 4 Head Shape Pan Drive Type Pozidriv Finish Plain Material Stainless	3000 pcs	workshop	ELTPPS302 ENGEL301 RENPV301

PVC pipes	20mm minimum of diameter and 3m of length	200 pcs	workshop	ELTPPS302 ENGEL301 RENPV301
PVC elbows	20mm minimum of diameter	200 pcs	workshop	ELTPPS302 ENGEL301 RENPV301
PVC joints coupling (sockets)	20mm minimum of diameter	200pcs	workshop	ELTPPS302 ENGEL301 RENPV301
Insulation tapes	Type Single Sided Feature Water Proof Tape Width 0-20 mm Tape Length 0-10 m	100 pcs	workshop	ELTPPS302 ENGEL301 RENPV301
Wall plug	Material:Plastic / metal Size: 6,8,10,12,16mm	12 boxes	workshop	ELTPPS302 ENGEL301 RENPV301
Impulse switch	Standard remote control - The auxiliaries and the compensator can be associated with the standard Bipolar 16 A - 250 V remote control ~ - Control current voltage: 230 V~ - Contact type: 2 NC	25	workshop	ELTPPS302 ENGEL301 RENPV301 ELTED302
PPR Pipe	Diameter: ½,3/4 and 1 inch Length: 6 m Material: Plastic	30	Field	RENSW301 RENDP 301
Ganger	Diameter: ½,3/4 and 1 inch Length: 6 m Material: Plastic	30	Field	RENSW301 RENDP 301
Elbows	Diameter: ½,3/4 and 1 inch Material: Plastic	120 pcs/each size	Field	RENSW301 RENDP 301

Tee joint	Diameter: ½,3/4 and 1 inch Material: Plastic	120 pcs/each size	Field	RENSW301 RENDP 301
Socket	Diameter: ½,3/4 and 1 inch Material: Plastic	120 pcs/each size	Field	RENSW301 RENDP 301
Union joint	Diameter: ½,3/4 and 1 inch Material: Plastic	120 pcs/each size	Field	RENSW301 RENDP 301
Reducer	Diameter: 1-3/4-1/2 inch Material: Plastic	120 pcs/each size	Field	RENSW301 RENDP 301
Water tap	Diameter: ½,3/4 and 1 inch Material: Plastic	30/each	Field	RENSW301 RENDP 301
Valve	Diameter: ½,3/4 and 1 inch Material: Plastic	80/each	Field	RENSW301 RENDP 301
Water insulation tape/Teflon	100% PTFE Thread Seal Tape Teflon Tape for Water Pipe Line	500 pcs	Field	RENSW301 RENDP 301
Nipple	Diameter: ½,3/4 and 1 inch Material: Plastic	120 pcs/each size	Field	RENSW301 RENDP 301

Plug	Diameter: ½,3/4 and 1 inch Material: Plastic	120 pcs/each size	Field	RENSW301 RENDP 301
Cap	Diameter: ½,3/4 and 1 inch Material: Plastic	120 pcs/each size	Field	RENSW301 RENDP 301
Water meter	Flow: 1.6m3/hr Port-port-length: 110mm Weight; 0.70kg	5 pcs	Field	RENSW301 RENDP 301
GI Pipe	Diameter: ½-3/4-1 inch	30 pcs	Field	RENSW301 RENDP 301
Elbows	Diameter: ½,3/4 and 1 inch Material: GI	120 pcs/each size	Field	RENSW301 RENDP 301
Tee joint	Diameter: ½,3/4 and 1 inch Material: GI	120 pcs/each size	Field	RENSW301 RENDP 301
Socket	Diameter: ½,3/4 and 1 inch Material: Galvanized Iron	120 pcs/each size	Field	RENSW301 RENDP 301
Union joint	Diameter: ½,3/4 and 1 inch Material: Galvanized Iron	120 pcs/each size	Field	RENSW301 RENDP 301
Reducer	Diameter: 1-3/4-1/2 inch Material: Galvanized Iron	120 pcs/each size	Field	RENSW301 RENDP 301
Water tap	Diameter: ½,3/4 and 1 inch Material: GI	30/each	Field	RENSW301 RENDP 301

Valve	Diameter: ½,3/4 and 1 inch Material: GI	80/each	Field	RENSW301 RENDP 301
Water insulation tape/Teflon	100% PTFE Thread Seal Tape Teflon Tape for Water Pipe Line	500 pcs	Field	RENSW301 RENDP 301
Nipple	Diameter: ½,3/4 and 1 inch Material: GI	120 pcs/each size	Field	RENSW301 RENDP 301
Pipe Plug	Diameter: ½,3/4 and 1 inch Material: GI	120 pcs/each size	Field	RENSW301 RENDP 301
Pipe Cap	Diameter: ½,3/4 and 1 inch Material: GI	120 pcs/each size	Field	RENSW301 RENDP 301
Water meter	Flow: min 1.6m ³ /hr Port-port-length: 110mm	5 pcs	Field	RENSW301 RENDP 301
Mild steel Tubes	40X40X1.25X6000mm	20 tubes pcs	Field	RENSW301
Angle iron	Size leg1 x leg2 x thickness: 500 x .500 x .125 Weight (lb/ft) :375 (lb/ft) area (in2): 11	40 pcs	Field	RENSW301
Welding electrode	Welding Rod : 7018 Flux composition: Iron powder low hydrogen Polarity: AC, DC+ Penetration: Medium Tensile strength: 70,000psi	25 kg	Field	RENSW301 RENPV301
Bricks	Brick should be thoroughly burnt	1000 PCS	FIELD	RENIS301

	uniform color, plane rectangular faces sharp straight right angle edges. Size : 200x 100x 40 mm (length x depth x height			
Clay	Clay soil from the valley	1000 kg	FIELD	RENIS301
Biomass waste	Banana leaves, eucalyptus leaves , etc	500 kg	FIELD	RENIS301
Sheet metal	MS.2000*1220*1 mm	5 pcs	FIELD	RENIS301
cement	Portland cement 32.5N	3 bags	FIELD	RENIS301
Grinding disk	Specifications: Specification: A 24 S BF Materials: Ferrous metals Materials in Detail: Steel/ferrous meta			
Steel ruler	Material : Aluminium Alloy Lenght :min 300mm Width :min 80mm	27	Workshop	ELTBW302
Cutting disk				

2. Training facilities

2.1. Furniture and office materials

Name and description	Specifications	Quantity	Type of room	Module code
Office Cupboard	<ol style="list-style-type: none"> 1. Two-door steel locker-minimum 2. Size: H1850 x W900 x D450mm 3. Thickness: 1.0mm 4. Volume: 0.178cbm 5. Fitting: 4shelves 	5	Store/ Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENS301 RENDP 301 RENIS301 ENGBM301 RENCS301
Glass Cupboard/Bookcase Cabinet Unit	<ul style="list-style-type: none"> - The Top Shelf to be fitted with double lockable glass door. - The unit to be made of MDF Board 18mm thickness for the frame; - Three Shelves. The back part on the unit should be reinforced with 18mm MDF board for rigidity and strength. - Approx. dimensions of approx. 900(l) x 440(w) x 1500(h)mm high. - The Lower section (cupboard) double lockable MDF board door. - The unit to be made of MDF Board 18mm thickness for the frame; 	1	Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENS301 RENDP 301 RENIS301 ENGBM301 RENCS301

	<ul style="list-style-type: none"> - Two Shelves.The back part on the unit should be reinforced with 18mm MDF board for rigidity and strength. - Approx. dimensions of approx. 900(l) x 440(w) x 900(h)mm high 			
Shelves for equipment storage	<ol style="list-style-type: none"> 1.Minimum Size:3 x0.5 x 2m (L x W x H) 2.5 Layer full steel 3.Type Cold – Rolled steel plate 	5	Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENS301 RENDP 301 RENIS301 ENGBM301 RENCS301
Medium back office Chairs	<ul style="list-style-type: none"> .Passive ergonomic seating with built in lumber support .Upright locking position. .Pneumatic seat .Height adjustment .Adjustable tilt tension control color: Black Dimensions: .Seat: 20"(D) x 20.5"(W) .Seat Height: 18"-21" 	6	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENS301 RENDP 301 RENIS301 ENGBM301 RENCS301
Office Tables with drawers	<ol style="list-style-type: none"> 1.With hanging pedestal 2.Melamine faced chipboard 3.Desk top and side panel :25mm 4.Modesty panel :18mm 6.Size: 1,500 x 800 x 750mm 7. Three fully locking drawers on the right hand side 	6	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENS301 RENDP 301 RENIS301 ENGBM301

				RENCS301
Visitor chairs	1.Back: 20"(W) x 13"(H) 2.Seat: 20"(W) x 21"(D) 3.Seat Height: 18" 4.3" thick foam	6	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301
Student Table	1. Size: Table: 1500x600x750mm Chair: 360x360x440mm 2.Material: Plywood Fireproof board& 1.2mm Thickness Tube, 22mm Tube Diameter 3.Board: Fireproofing, scratch-resistant, without contaminated 4. Metal: Epoxy Powder coated, antirust, damp proof, strong	14	Classroom	ELCEC302 ELCLA302 ELCME302 ELCAR302 ELCEP302 ELCSD302 ELCEM302 RENCS301 ELTED302
Table for Computer Room	1. Size: Table: 1500x600x750mm Chair: 360x360x440mm 2.Material: Plywood Fireproof board& 1.2mm Thickness Tube, 22mm Tube Diameter 3.Board: Fireproofing, scratch-resistant,	14	ICT LAB	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302

	without contaminated 4. Metal: Epoxy Powder coated, antirust, damp proof, strong			
Student Chairs	1. Size: 2400x1200mm 2.Economy non-magnetic chalkboard on 2 sides 3.Aluminum framed, free-standing 4.whiteboard on one side and chalkboard on the other.	52	Classroom and ICT LAB	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302
Portable, Reversible Dry Erase Boards & Chalkboards -	1. Size: 1800x1200mm 2.Economy non-magnetic chalkboard on 2 sides 3.Aluminum framed, free-standing 4.whiteboard on one side and chalkboard on the other.	3	Classroom, LAB and Workshop	ELTFE302 ELTED302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301

				RENC301
Papers	Size: A ₄	5 carton of 5 reams each	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
Pens	Ball point pen(Blue)	1 Packet	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301

				ENGBM301 RENCS301 ELTED302
	Ball point pen(Red)	1 Packet	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302
USB discs	4 GB	6 Pcs	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301

				RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302
Stapling Machine	Rapid K2, 105 mm Length	2 Pcs	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302
Staplers	24/6	5 Packets	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301

				RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 ELTED302
Paper clips	33mm, small Size,	1Boxe of 10 Packets	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
	55mm, Big sizes	1 Box of 10 Packets	Trainer's Office	ELTFE302 ELTPPS302

				ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 ELTED302
Punching machines	8Cm, Punching Capacity: 36mm With calibrated Guide	1 Pc	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
Stapler removers		2 Pcs	Trainer's Office	ELTFE302

				ELTPPS302 ENGEL301 RENPV301 RENS301 RENDP 301 RENIS301 ENGBM301 ELTED302
Pencils	Dolphin Super B Writer	1 Packet of 12 Pcs	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENS301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302

Notebooks	A4	1 Carton of 60 Pcs each	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENS301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
Plastic files	A4	2 Packets of 12 Pcs	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENS301 RENDP 301 RENIS301 ENGBM301

				RENC301 ELTED302
Register books		6 Pcs	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
Office trays		6 Pcs	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301

				RENIS301 ENGBM301 RENCS301 ELTED302
Post it	3" x 5"/7.6 x 12.7 Cm , 12 Pads	1 Box	Trainer's Office	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302
Non-permane Markers	1. Dimension:D1.6 x L13.5 Cm ;2. Fiber tips and writing smoothly;3.Quick drying; 4.Good performance; 5.Non- Toxic and environmentally safe; 6.Smell favourably	10 Packets	Classroom, LAB and Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301

				RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
Chalks (Cartons of 36 Packets for each carton)	Cartons of white colors	1 Carton of white colors	Classroom, LAB and Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
	Cartons of Colors	1 Carton of Colors	Classroom, LAB and Workshop	ELTFE302 ELTPPS302 ENGEL301 RENPV301

				RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302
Square Graph (drafting) paper (Book of 25 papers each)	A ₃	5 Books	Drawing room	ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302
	A4	5 Books	Drawing room	ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302
Internship logbook for trainees	A4	25 logbooks	Industry	ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302

Internship logbook for the Industry supervisor	A4	25 logbooks	industry	ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302
Internship logbook for school supervisor	A4	25 logbooks	Industry	ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301

2.2. Audio-visual materials

Name and description	Specifications	Quantity	Type of room	Module code
Projectors and Accessories (Remote, White board,)	Sharp, Clear Visuals: SVGA native resolution (800x600) for sharp views Flexible Connectivity: Dual VGA-In connectors for easy switching between multiple presenters DLP® Projector: Filter-free to reduce maintenance cost and utilize Brilliant Color™ for accurate, true to life images, DLP (Digital Light Processing). Mounted in ceiling	2	ICT lab and Classroom	ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302

Computers	-MD Athlon Processor 3GHz -6GB DDR3 RAM -640GB Hard Drive -NVIDIA GeForce 6150SE -Windows 7 Home Premium 64-Bit	30	ICT LAB and Trainer's office	ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
Each modules with its specific DVD or CDs		Different	ICT LAB	ELTPPS302 ENGEL301 RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENC301 ELTED302
CAD Software		30 Users	ICT LAB	ELTPPS302 ENGEL301 RENPV301 RENDP 301 RENIS301 RENC301 ELTED302

2.3. Didactic materials

Name and description	Specifications	Quantity	Type of room	Module code
Black board drawing instruments	A 5-piece set of durable, lightweight plastic instruments	2 set	classroom	ELTPPS302 ENGEL301

	designed for blackboards. Features handles for ease of use. Includes a 45° triangle (23" base, 16" sides), 60° triangle (2" base), 180° protractor, meter ruler (39"/100 cm), and a clear acrylic compass (18" L with rubber suction cup).			RENPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302
Solar panel polycrystalline	Maximum Power/Pmax(W) 10W Maximum Power Tolerance 0-3% Open-Circuit Voltage/Voc(V) 21.6V Short-Circuit Current/Isc(A) 0.67A Max Power Voltage/Vmp(V) 18V Max Power Current/Imp(A) 0.56A Weight(Kg) 1.2Kg Dimensions(mm) 355x255x17mm Max System Voltage (V) 1000V Max Over Current Protection Rating(A) 15 Cell Technology Polycrystalline Silicon Power Specifications at STC: 1000W/m ² , AM1.5, 25°C.	2	Classroom/lab	ELTPPS302 ENGEL301 ENBPV301 RENSW301 RENDP 301 RENIS301 ENGBM301 RENCS301 ELTED302
Solar panel monocrystalline	Maximum Power/Pmax(W) 10W Dimensions: 355mm x 252mm x 25mm Weight: 1.3kg Open Circuit Voltage: 21.6V	2	Classroom/lab	RENPV301

	Short Circuit Current: 0.66A Power Allowance Range: 5% Max Power Voltage: 16.96V Max System Current: 0.5A Max System Voltage: 300VDC Number of Cells: 36			
Solar panel Amorphous	Out Peak Power(PM) 5W~100W Power Allowance Range 3% Open Circuit Voltage(Voc) 21.5V ,21.8V Max.Power Voltage(Vmp) 17.5V~18V Number of Cells 36 Max System Voltage 1000V STC AM1.5,1000w/m ² ,25°C	2	Classroom/lab	RENPV301
inverter	Power: 500 - 1000W Output Type: Single Size: 250X165X60MM Weight: 1.48KG/DC to AC 1000w solar power inverter 12v 220v Input Voltage: DC12V/24v/36v/48v (optional) Output Voltage: AC220V/230V/240V Type: DC/AC Inverters Output Frequency: 60Hz/50Hz Output Current: USB/0.5A Product name: DC to AC 1000w solar power inverter 12v 220v Rated power: 1000W	2	Classroom/lab	RENPV301
Charge controller	<ul style="list-style-type: none"> Rated current 20A Fully automated operation and auto 12/24V selection 	2	Classroom/lab	RENPV301

	<ul style="list-style-type: none"> • Wide solar input voltage range up to 50V • 3 pairs of terminals (input, battery, output) for wires up to 6mm² • LEDs to indicate charging, battery and load • Temperature sensor for automatic compensation (-30mV/C/12V) • Over load protection (1.25 times of rated current for 60 sec, 1.5 times of rated current for 5 sec) 			
Battery	Lithium Ion Battery capacity 50 Ah Charging voltage 14.4 V Maximum charging current 25 A Standby voltage 13.8 V	2	Classroom/lab	RENPV301
Solar panel mounting accessories	Solar Panel mounts Universal mounting Kit Adjustable Angle Mounting Wall and Pole Mount Universal Solar Panel Stand Panel Bonding Agent Solar Cable Entry Box Cable Packs	1 set	Classroom/workshop	RENPV301
Solar water heater (flat collector)	Tank capacity- 100 LPD/Liters. Ideal for 2-3 person with bathroom connection.	1	Classroom/Workshop	RENSW301

	<p>Normal Pressure (Water Heater Tank and main tank should be on the same level).</p> <p>High density compressed PUF Insulation (50 mm) to store hot water for up to 48 hrs.</p> <p>Collector Fins- Ultrasonic welded with Nalsum Coating.</p> <p>Copper pipe 24 SWG, Aluminium strip 0.20 mm.</p> <p>Inner Tank material- C.R.C.A Sheet, 1.2 mm.</p> <p>Support Structure- Mild steel with powder coating.</p> <p>Number of panels-1.</p> <p>Electricity saving- 540 units/year</p>			
Solar water heater (evacuated tube collector)	<p>Usage: Domestic</p> <p>Capacity (LPD): 100</p> <p>Material: Stainless steel 445J1M</p> <p>Insulation: PUF</p> <p>Tube Material: Steel board plating with Zinc</p> <p>No of Tubes/ Fins: 12</p> <p>Tube Length (mm): 1800</p> <p>Tube Thickness (mm): 1.6</p>	1	Classroom/Workshop	RENSW301

2.4. Infrastructures

The workshop must be of concrete structure. Based on class size of 25 learners, the space requirements for the teaching/learning and circulation areas are as follows:

Infrastructure

The workshop must be of concrete structure. Based on class size of **25 learners**, the space requirements for the teaching/learning and circulation areas are as follows:

Type of premises	Number of rooms	Length (meters)	Width (meters)	Total surface (m ²)
Classroom	1	9	7	63
Workshop/site	1	22	13	286
ICT lab	1	10	9	90
Renewable energy laboratory	1	9	7	63
Drawing room	1	12	10	120
Storage area for consumables	1	5	6	30
Storage area for tools	1	9	7	63
Trainers' room	1	4	4	16
Washroom	2	2	4	8

N.B: The occupation of a training classroom is in function of a group of 25 learners for the length of the training package not considering the hours of the internship. The group of trainees is divided into 2 (12 or 13 learners per workshop).

The plans of the workshops and classrooms are annexed to the training organisation guide.

* Total hours of occupation must be equal to the total duration of the training (excluding the duration of the internship).

**The percentage of the occupation must equal 100%.

The premises that are not used in learning activities can have hours / occupation. So we will write 0 for these types of premises.

