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Training Organisation Guide (ToG)

For

TVET CERTIFICATE III in ELECTRICAL TECHNOLOGY CURRICULUM

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Part 1: Pedagogical organisation

1. **Presentation of the training programme**

1.1. The qualification

This qualification provides the skills, knowledge and attitudes for a learner to be competent in a range of routine tasks and activities that require the application of a limited range of basic practical skills in a defined context. Work would be undertaken in various energy industries where Domestic electrical installer, Domestic electrical Maintenance Technician, Domestic electrical Appliances repairer are provided, Learners may work with minimum supervision.

1.2. Minimum Entry requirements

The minimum entry requirement to this qualification is to be physically and mentally capable with an interest in Electrical Technology and related areas.

2. The training programme

2.1 Information about competencies

No	Code	Complementary competencies	Credit
1	CCMOL302	Describe the occupation and learning process	3
2	CCMHE302	Maintain SHE at workplace	3
3	CCMCL302	Apply computer literacy	3
4	CCMEN302	Communicate simply using English in familiar situations	3
5	CCMWC302	Communicate effectively at workplace	3
6	CCMKN302	Gukoresha Kinyarwanda kiboneye	3
7	CCMCB302	Create a business	3
8	CCMCO301	Co-curricular activities	7
9	CCMCI301	Citizenship	3
Total			**31**

	No	Code	Core competencies	Credit
GENERAL	1.	GENAM301	Apply Algebra and trigonometry	10
	2.	GENBC301	Demonstrate basics of chemistry	4
	3.	GENPHY301	Apply General Physics	4
	4.	ELTBE301	Apply bench work to domestic electricity	7

	5.	ELTDE301	Perform domestic electrical drawing	8
	6.	ELTFE301	Apply Fundamental of Electricity and Electronics	6
SPECIFIC	7.	ELTEM301	Perform Domestic Electrical Maintenance and Repair Domestic Appliance	10
	8.	ELTIEC301	Lay electrical conduit systems perform wiring / cabling and install electrical lighting and power sockets	15
	9.	ELTPP301	Install power protection system	8
	10.	ELTAE301	Install Automatic Electrical Switches and Detectors	9
	11.	ELTPV301	Install Photo Voltaic Home System	8
	12.	ELTIA301	Integrate the workplace	30
Total				**150**

3. Human resources

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

No.	Modules	Qualification	Field or Industry experience	Technical teaching experience	Languages skill	ICT skills.
1.	**GENAM301/** ALGEBRA AND TRIGONOMETRY	-A0 in Mathematics with education A0 Mathematics and related fields	-A0 with related field	-No teaching experience required, -However, having any, experience in teaching will be an added advantage.	Fluent in English; French is an added advantage	Microsoft word Microsoft excel Microsoft power point Internet exploration Microsoft equations
		-A1 in Mathematics with education	-A1 with 1year working experience			

2.	**GENBC301/** BASICS OF CHEMISTRY	-A0 in Chemistry with education A0 in Chemistry	-A0 with related field	-No teaching experience required, -However, having any, experience in teaching will be an added advantage.	Fluent in English; French is an added advantage	Microsoft word Microsoft excel Microsoft power point Internet exploration
		-A1 in Chemistry with education	-A1 with 1year working experience			
3.	**GENPHY301/** GENERAL PHYSICS	-A0 in Physics with education	-A0 with related field	-No teaching experience required, however, having any, experience in teaching will be an added advantage.	Fluent in English; French is an added advantage	Microsoft word Microsoft excel Microsoft power point Internet exploration
		-A1 in Physics with education	-A1 with 1year working experience			

4.	**ELTBW302/** BENCH WORK TO DOMESTIC ELECTRICITY	-A0 in Electrical Engineering/ Electrical Power Engineering -A0 in Electro-Mechanical Engineering/mechatronics engineering and related fields	-A0 with related field	For any candidate with A0, no teaching experience required -However, having any experience in teaching and Training on pedagogy(CBT&CBA) will be an added advantage. For any candidate with A1 and A2 shall have teaching experience of 1 year and 2 years respectively.	Fluent in English; French is an added advantage	Microsoft word Microsoft excel Microsoft power point Internet exploration
		-A1 in Electrical Engineering	-A1 with 1year working experience			
		-A2 Electricity/ Electrical Technology	-A2 with 2years working experiences			

#		Qualification	Experience	Notes	Language	Computer literacy
5.		-A0 in Electrical Engineering/Technology / Electrical Power Engineering A0 in Alternative energy/renewable energy	-A0 and A1 in that field	No teaching experience required -However, having any experience in teaching and Training on pedagogy(CBT&CBA) will be an added advantage.	Fluent in English; French is an added advantage	Computer literacy - Microsoft word - Microsoft excel - Microsoft Power Point and internet) CAD applications
		-A1 in Electrical Engineering/Technology -A1 in Alternative energy/renewable energy				
	ELTED302/ DOMESTIC ELECTRICAL DRAWING					
6.	**ELTFE302/** FUNDAMENTAL OF ELECTRICITY AND ELECTRONICS	-A0 in Electrical/electrical power/ Electronics Engineering/ Technology	-A0 with related field A1 1year working experience in that field	For any candidate with A0, no teaching experience required however, having any experience in teaching and Training on pedagogy(CBT&CBA)	Fluent in English; French is an added advantage	Computer literacy - Microsoft word - Microsoft excel - Microsoft Power Point and internet)

		-A0 Alternative energy/renewable energy -A0 in Applied Physics -A1 in Electrical and Electronics Engineering/ Technology A1 in Alternative energy/renewable energy		will be an added advantage. For any candidate with A1 shall have teaching experience of 1 year.		
7.	**ELTEM302/** DOMESTIC ELECTRICAL MAINTENANCE AND REPAIR DOMESTIC APPLIANCE	- A0 in Electrical /Technology engineering - A0 Electrical Power Engineering -	- A0 in working field	-For any candidate with A0, no teaching experience required -However, having any experience in teaching	Fluent in English; French is an added advantage	Computer literacy - Microsoft word - Microsoft excel - Microsoft Power Point and internet)

		- A1 in Electrical Engineering/ Technology - A1 Electrical Power Engineering	- A1 with 1year working experience	and Training on pedagogy(CBT&CBA) will be an added advantage. -For any candidate with A1 and A2 shall have teaching experience of 1 year and 3 years respectively.		
		- A2 Electricity/ Electrical Technology	- A2 with 3 years working experiences			
8.	**ELTLS302/** LAY ELECTRICAL CONDUIT SYSTEMS PERFORM WIRING / CABLING AND INSTALL ELECTRICAL	- A0 in Electrical Engineering/ Technology - A0 Electrical Power Engineering	- A0 in working field	For any candidate with A0, no teaching experience required however, having any experience in teaching and Training on pedagogy (CBT&CBA)	Fluent in English; French is an added advantage	Computer literacy - Microsoft word - Microsoft excel - Microsoft Power Point and internet)

	LIGHTING AND POWER SOCKETS	- A1 in Electrical Engineering/ Technology - A1 Electrical Power Engineering	- A1 with 1year working experience	will be an added advantage. For any candidate with A1 shall have teaching experience of 1 year.		
9.	**ELTPS302/** PROTECTION SYSTEM INSTALLITION	- A0 in Electrical Engineering/ Technology - A0 Electrical Power Engineering	- A0 in working field	For any candidate with A0, no teaching experience required however, having any experience in teaching	Fluent in English; French is an added advantage	Computer literacy - Microsoft word - Microsoft excel - Microsoft Power Point and internet)

No.	Module	Qualification	Experience	Additional Requirements	Language	Computer Skills
		- A1 in Electrical Engineering/ Technology -A1 Electric al Power Engineering	- A1 with 1year working experience -	and Training on pedagogy (CBT&CBA) will be an added advantage. -For any candidate with A1 shall have teaching experience of 1 year.		
10.	**ELTSD302/** INSTALL AUTOMATIC ELECTRICAL SWITCHES AND DETECTORS	- A0 in Electrical Engineering/Techn ology - A0 Electrical Power Engineering	- A0 in working field	For any candidate with A0, no teaching experience required however, having any experience in teaching	Fluent in English; French is an added advantage	Computer literacy - Microsoft word - Microsoft excel - Microsoft Power Point and internet)

No.	Code/Title	Qualification	Experience	Additional	Language	Computer
		- A1 in Electrical Engineering/Technology - A1 Electrical Power Engineering	- A1 with 1year working experience	and Training on pedagogy(CBT&CBA) will be an added advantage. -For any candidate with A1 shall have teaching experience of 1 year.		
11.	**ELTPV302/** INSTALL PHOTO VOLTAIC HOME SYSTEM	-A0 in Electrical Engineering/ Power/Technology -A0 in Alternative energy/renewable energy	- A0 in working field	For any candidate with A0, no teaching experience required however, having any experience in teaching and Training on pedagogy(CBT&CBA) will be an added advantage.	Fluent in English; French is an added advantage	Computer literacy - Microsoft word - Microsoft excel - Microsoft Power Point and internet)

		A1 in Electrical Engineering/ Power/Technology A1 in Alternative energy/renewable energy	- A1 with 1year working experience	-For any candidate with A1 shall have teaching experience of 1 year.		

Part 2: Resources organisation

1. **Material Resources**

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 : 4.0m Maximum weight of 20 lbs (~10kgs), light-duty for household use.	5	Workshop / Field	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301

	Minimum clear width of 11.5 inches (29.21cm) on portable ladders and 16 inches (40.64cm) for fixed ladders.			
Hand drilling machines	Power input 450 W Input Voltage 220/240V torque 9.5 nm speed 0-1500 rpm/min Chuck 13 mm Reversible Ergonomic design	5	Workshop / Field	ELTBE301 ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301
Grinder machine	Power input 450 W Input Voltage 220/240V torque 9.5 nm speed 0-1500 rpm/min Chuck 13 mm Reversible Ergonomic design	5		ELTBE301 ELTIEC301
Riveting machine	**Actuation :** Manual / Electric **Throat Depth :** 10"-16" (250mm-400mm) **Form Factor :** Hand Held/ Benchtop/ Free Standing **Riveting Method :** Compression/ Impact/ Non impact (Orbital / Spin) **Rivet Type :** Blind Rivet/ Compression Rivet/ Full Tubular **Rivet Material**: Aluminum, Copper, Brass	5	Workshop	ELTBE301 ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301

Extension cable	Length: 30m-50 m Six socket outlets, two poles and ground electrode 10/16A/250V, Cable 3x2, 5mm^2 Power 3000W.	2	Workshop	GENAM301 GENBC301 GENPHY301 ELTBE301 ELTDE301 ELTFE301 ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
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 Weight (approx.) 8.5 Kgs Base Type: Fixed	25	Workshop	ELTBE301
Pipe vice	P23 Size: 10-60mm	10	workshop	ELTBE301 ELTIEC301 ELTAE301 ELTPV301
Electrical workbenches	Made in wood Size: H750/610*W1400/1600/1800*D700mm Including: Table Supporter, tabletop, Back Panel, Suspension Rail, Power sockets Rail.	25	workshop	ELTBE301 ELTEM301 ELTIEC301 ELTAE301 ELTPV301
Oscilloscope	Bandwidth: 60-100MHz Sample rate (Real time): 1GS/s	5	Workshop	ELTFE301

	Display: 8.0 color LCD, TFT screen 640X480pixels Channel: Dual channels + external trigger Max input Voltage: 400V (DC + AC) Vertical Resolution (A/D): 8 bits Waveform storage: 4 waveforms Power Supply: 100-240V ACRMS, 50Hz, CAT II			
Solar panel	Type: amorphous Power: Minimum 80watts Peak Output: 5.0A @ 17.2V Approx. watt-hours/day*: 560 Approx. amp-hours/day*: 35 Dimensions: 1196x534x35mm Weight: 7.9kg * Based on 7 hours of average daily peak sunlight hours	5	workshop	ELTPV301
Inverter	Power: 500 - 1000WOutput Type: Single phase 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 Peak power: 2000W Rated output voltage: 220V/230V Rated input voltage: 12V /24V/48V Efficiency: ≥85% Output waveform: modified sine	5	Workshop	ELTPV301

	Service application: for solar energy, home appliance Colour: blue/black for power inverter			
Charge controller	Rated current: Minimum 20A Fully automated operation and auto 12V/24V selection Wide solar input voltage ranges 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 secs, 1.5 times of rated current for 5 sec) Short circuit protection (3.5 times of rated current) Over charge / discharge, overheating and other protection features Self-consumption: 6mA max Working temperature: -35C to +55C Size: 14.7 x 7.5 x 4.5 cm Weight: 230 g Multiple mounting holes for ease of installation	5	workshop	ELTPV301
Battery	Lead acid battery 12V, 75Ah Nominal Voltage: 12V Rated capacity (10 hrs rate): 75Ah Dimension: 260*167*209/227mm Weight: 22.5kg Terminal : T12 Carton Dimension: 268*173*250mm	5	workshop	ELTPV301

	Dry battery -Nominal Voltage: 12V -Capacity : 30 - 50AH -Size : 260X167X209			
Solar panel mounting accessories set	**The set contains:** • Solar Panel Clamp • Tin Roof Tilt Type Structure • Aluminum Strut Channel • Solar Module Mounting Clamp • Strut Channel • Double Side Mounting Rails • Omega Clamp • Spring Nut **Material: Aluminum** **Thickness: 1 - 5 mm**	5 set	Workshop	ELTPV301

1.2. Category 2: Tools and instruments

Name and description		Specifications	Quantity	Type of room	Module code
PLIERS	Universal pliers	• 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	**ELTEM302** **ELTED302** **ELTFE302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302** **ELTBW302**
	Cutting pliers	• High leverage diagonal cutting pliers • Precision cutting edge • For hard and piano wires • VDE-tested to IEC 60900 1000V	30	Workshop	
	Wire stripping pliers (with spring)	• 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	
	Bent nose pliers	• 6" & 8" bent nose pliers • Chrome vanadium steel • Drop forged & heat treated • VDE-tested to IEC 60900 1000V • Safety ergonomic soft handle	30	Workshop	

Electrician knife	With straight strong blade and safety cap Adjustable Blade length: **minimum 50mm** Blade material: **stainless,steel** Weight**: minimum105g**	30	Workshop	**ELTEM302 ELTED302 ELTFE302 ELTLS302 ELTPS302 ELTPV302 ELTSD302**
Spanners kit	**Material : Chrome Vanadium** Package Contadins : **23-Piece** : 6mm, 7mm, 8mm, 9mm, 10mm, 11mm, 12mm, 13mm, 14mm, 15mm, 16mm, 17mm, 18mm, 19mm, 20mm, 21mm, 22mm, 23mm, 24mm, 25mm, 27mm, 30mm and 32mm	5	workshop	**ELTEM302 ELTED302 ELTFE302 ELTLS302 ELTPS302 ELTPV302 ELTSD302 ELTBW302**

Insulated Screwdriver set	Head Style: **FLAT**
	Material:
	  • **Shank:Steel**
	  • **Handle:plastic**
	Size:Minimum 20cm
		27	workshop	**ELTEM302
				ELTED302
				ELTFE302
				ELTLS302
				ELTPS302
				ELTPV302
				ELTSD302
				ELTBW302**

	Head Style: **SQUARE**
	Material:
	  • **Shank: Steel**
	  • **Handle: plastic**
	Size: Minimum 20cm
		27	Workshop	

	Head Style: **Phillips/star** **Material:** • **Shank: Steel**	30	Workshop	

	• **Handle: plastic** **Size:Minimum 20cm**			
Measuring tape	casing, **Steel** blade length:**5 m** Graduation **: metric/inches** Blade material:**stainless steel** Cover material **: plastic ,stainless steel**	27	Workshop	**ELTEM302** **ELTED302** **ELTFE302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302** **ELTBW302**
Hammers	**Electrician hammer:** ➢ wooden handle, ➢ net weight:500 g **Material :** • Head:**high carbon steel/heat treated steel** • Handle: **wooden**	27	workshop	**ELTEM302** **ELTED302** **ELTFE302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302** **ELTBW302**
	Claw hammer: ➢ sure-grip handle ➢ net weight:**500g** **Material :** • Head:**high carbon steel/heat treated steel** • Handle: **wooden**	5	Workshop	
	Club hammer: ➢ wood handle ➢ net weight **1.8 kg** **Material :** • Head:**high carbon steel/heat treated steel** • Handle: **wooden**	5	Workshop	
	Plastic hammer:	5	Workshop	

	➢ Head length:**80mm** ➢ Total length:**260mm** ➢ Head width:**22mm** ➢ Weight:**120g** **Material :** • Head:plastic • Handle: **wooden**			
Chisel	**Stoning flat** Material: **high carbon steel**	27	workshop	**ELTEM302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302**
	Stoning point Material: **high carbon steel** Length**: minimum 320mm**	27	workshop	
Plastic pipe cutter	Material: ➢ Blade: **Aluminium Alloy** ➢ Handle**: Aluminium/steel** Thickness Of Blade: **minimum3.0mm**	27	workshop	**ELTEM302** **ELTED302** **ELTFE302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302** **ELTBW302**
Hack saw	Blade Material **: Metal** Cutting Angle : **up to 90 Degrees** Blade Length : minimum 30cm **Other features** Plastic coated High blade tensioning mechanism Comfortable soft grip handle	27	workshop	**ELTEM302** **ELTED302** **ELTFE302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302** **ELTBW302**

Phase tester	Indicator : **Single Light** Voltage range **: 100V-1000V**	27	workshop	**ELTEM302** **ELTED302** **ELTFE302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302** **ELTBW302**
Voltage tester	**Suitable for DC and AC voltage** Test range DC voltage : **6/12/24/50 V** Test range AC voltage : **110/220/380 V**	27	workshop	**ELTEM302** **ELTED302** **ELTFE302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302** **ELTBW302**
Spirit level	Material**: Aluminum** Number of Vials: **3** Length: **450 mm** Width: **50 mm** Accuracy of vials: **0.5mm/m** **End caps with hang hole**	27	workshop	**ELTEM302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302**

Try square		Material: **stainless steel** Ruler length: **minimum30cm** Foot width: **minimum28mm** Handle length: **minimum122mm** Handle width: **minimum26mm**	27	workshop	**ELTEM302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302**
Multimeter	Digital	Auto range Data hold **multimeter measuring:** DC Voltage: **(0-200 mV, 0-2 V, 0-20 V, 0-200 V, 0-1000 V)** AC Voltage **:(0-200 mV, 0-2 V, 0-20 V, 0-200 V, 0-750 V)** DC Current **:(0-2 mA, 0-20 mA, 0-200 mA, 0-20 A)** AC Current :**(0-2 mA, 0-20 mA, 0-200 mA, 0-20 A)** Resistance **:(0-200 Ω, 0-2 k Ω, 0-20 k Ω, 0-200 k Ω, 0-2 M Ω, 0-20 M Ω, 0-200 M Ω)** Capacitance**: (0-20 nF, 0-200 nF, 0-2 μF, 0-20 μF, 0-200 μF)** **NPN and PNP Transistor gain (hFE at low current)** **Audible Continuity / Diode check** Power: **6F22(9V) rechargeable battery** Cover material: **Plastic** IP*4:**able to protect the multimeter against water splashes from any direction**	27	workshop	**ELTEM302** **ELTED302** **ELTFE302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302** **ELTBW302** **GENPHY301**

		IP*5: **resistant to Sustained low pressure water jet spray** IP*6: **Resistant to high pressure ,heavy sprays of water**		
	Analogue	Auto range Data hold **multimeter measuring:** DC Voltage: **(0-200 mV, 0-2 V, 0-20 V, 0-200 V, 0-1000 V)** AC Voltage **:(0-200 mV, 0-2 V, 0-20 V, 0-200 V, 0-750 V)** DC Current **:(0-2 mA, 0-20 mA, 0-200 mA, 0-20 A)** AC Current **:(0-2 mA, 0-20 mA, 0-200 mA, 0-20 A)** Resistance **:(0-200 Ω, 0-2 k Ω, 0-20 k Ω, 0-200 k Ω, 0-2 M Ω, 0-20 M Ω, 0-200 M Ω)** Capacitance**: (0-20 nF, 0-200 nF, 0-2 µF, 0-20 µF, 0-200 µF)** **NPN and PNP Transistor gain (hFE at low current)** **Audible Continuity / Diode check** Power: **6F22(9V) rechargeable battery** Cover material: **Plastic** IP*4:**able to protect the multimeter against water splashes from any direction**	10	workshop

		IP*5: **resistant to Sustained low pressure water jet spray** IP*6: **Resistant to high pressure ,heavy sprays of water**			
Digital Insultions Tester		**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 - 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)** - 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** - Accuracy : **(he output test voltage is maintained within the tolerance of 0% +2% +2 V)** - Short current : **1.7 mA 1.7 mA 1.4 mA** Cover material: **Plastic**	5	Workshop	**ELTEM302 ELTED302 ELTFE302 ELTLS302 ELTPS302 ELTPV302 ELTSD302 ELTBW302 GENPHY301**

	IP*4:**able to protect the multimeter against water splashes from any direction** IP*5: **resistant to Sustained low pressure water jet spray** - IP*6: **Resistant to high pressure ,heavy sprays of water**			
Digital clamp-on multimeter	- 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** - **Data Hold** - **Back Light (hold for over 2 seconds)** Cover material: **Plastic** IP*4:**able to protect the multimeter against water splashes from any direction** IP*5: **resistant to Sustained low pressure water jet spray** - IP*6: **Resistant to high pressure ,heavy sprays of water**	10	workshop	ELTEM302 ELTED302 ELTFE302 ELTLS302 ELTPS302 ELTPV302 ELTSD302 ELTBW302 GENPHY301

Watt meter		Power Range :**100 mW to 10 kW** Frequency Range :**0.45 MHz to 2.3 GHz** Voltage Range:**0-400V AC** Accuracy**: ±5% (full scale)** Impedance :**50 Ohms Nominal** **Accessories:** AC adaptor, carrying case, operation manual book. Cover material: **Plastic** IP*4: **able to protect the multimeter against water splashes from any direction** IP*5: **resistant to Sustained low pressure water jet spray** IP*6: **Resistant to high pressure, heavy sprays of water**	5	Workshop	**ELTEM302 ELTED302 ELTFE302 ELTLS302 ELTPS302 ELTPV302 ELTSD302 ELTBW302 GENPHY301**
Single phase Energy meter	DIGITAL	Rated voltage:**220-240** Frequency: **50HZ/60HZ** Dimensions: **130mmX215mmX125mm** Mounting type: **Wall Mounted** Insulation performance: **AC voltage 4Kv for 1 minute, 1.2/50us waveform impulse voltage 6** Cover material: **Plastic** IP*4: **able to protect the multimeter against water splashes from any direction** IP*5: **resistant to Sustained low pressure water jet spray** IP*6: **Resistant to high pressure, heavy sprays of water**	15	Workshop	**ELTEM302 ELTLS302 ELTPS302 ELTPV302 ELTSD302**

	ELECTROMECHANICAL ENERGY METER	Rated voltage:**220-240** Frequency: **50HZ/60HZ** Dimensions: **130mmX215mmX125mm** Mounting type: **Wall Mounted** Insulation performance: **AC voltage 4Kv for 1 minute, 1.2/50us waveform impulse voltage 6** Cover material: **Plastic** IP*4: **able to protect the multimeter against water splashes from any direction** IP*5: **resistant to Sustained low pressure water jet spray** IP*6: **Resistant to high pressure, heavy sprays of water**	15	Workshop	
Plumb bob		Material: **Cast iron or Round steel material** Weight: minimum **750g**	15	Workshop	**ELTED302** **ELTFE302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302** **ELTBW302** **GENPHY301** **GENAM301**

Vernier caliper					
	ANALOGUE	1. Measuring range : **0-300mm/0-12"** 2. Graduation : **0.05mm/ 1/128"** 3. Jaw length : **64mm** **Other features** 1.Four usages for measuring outside diameter, inside diameter step and depth 2.Made of solid stainless steel 3.Distinct lines and figures etched against satin chrome finish 5.With locking screw for stable reading			**ELTEM302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302**
	DIGITAL	Material: **Stainless Steel** Measurement Range: **0-150mm** Accuracy: **0.01mm**			
Lux meter		Display: **3-1/2-digit 18mm LCD; Power: 9V** Lux - **Accuracy: ±3% ±10 digits (0-20,000 lux); ±5% ±10 digits (over 20,000 Lux)** Repeatability: **±2%; Temperature** Characteristic: **±0.1%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** Cover material: **Plastic** IP*4: **able to protect the multimeter against water splashes from any direction** IP*5: **resistant to Sustained low pressure water jet spray**	10	Workshop	**ELTEM302** **ELTED302** **ELTFE302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302** **ELTBW302** **GENPHY301** **GENAM301**

	IP*6: **Resistant to high pressure, heavy sprays of water**			
Frequency meter	Display：**4 digits LED display red or green**） Accuracy：**±(0.1%reading+2digit)** Input signal: **AC Voltage, rated signal value: 0-600V（admissible input Voltage error 80%, +100%）** Measuring：**0-1M Hz** Max Signal Consumption：**＜0.3VA** Operating Environment：**temperature-10C°~ +50 C° humidity：≤85%** Storage Environment: **temperature -30C°~ +60 C° humidity：≤70%** Insulation Test: **over 2000V/min** Cover material: **Plastic** IP*4: **able to protect the multimeter against water splashes from any direction** IP*5: **resistant to Sustained low pressure water jet spray** IP*6: **Resistant to high pressure, heavy sprays of water**	10	Workshop	**ELTEM302 ELTED302 ELTFE302 ELTLS302 ELTPS302 ELTPV302 ELTSD302 ELTBW302 GENPHY301**
Earth resistance tester	Measure Earth Resistance **:(20/200/2000-ohm ranges)** Measures Earth AC Voltage: to **200 Vac (40 to 500 Hz)** **Other features** Timed function test turns output off after a 3 to 5 min continuous test	5	Workshop	**ELTEM302 ELTLS302 ELTPS302 ELTPV302 ELTSD302**

	2 mA measuring current measures resistance without tripping circuit breakers Data Hold Small & Light Weight Auto Power Off IEC 1010 CAT III 200V / CE Power Source : 6 "AA" cells **Accessories:** Instruction Manual, Test Leads, Auxiliary Earth Spikes, Carrying Case and Batteries Cover material: **Plastic** IP*4: **able to protect the multimeter against water splashes from any direction** IP*5: **resistant to Sustained low pressure water jet spray** IP*6: **Resistant to high pressure, heavy sprays of water**			
Rivet gun	Material: **Metal Body, Rubber Handle Grips** Compatible Rivet Diameter : **3/16in., 3/32in., 5/32in.** Weight **: minimum 1.17 kg** Size : **minimum 29.7 x 18.6 x 5.7 cm**	10	Workshop	**ELTBW302**
Pen scriber	Material : **carbon steel** Length : **minimum250mm** Weight : **minimum 76g** Length: **minimum 127mm**	10	Workshop	**ELTBW302**
Micrometer screw gauge	Material : **Hardened steel** Measuring Range (mm): **100-125** Division Value (mm) : **0.01**	10	Workshop	**ELTBW302**

		Precision (μm) : **0.006** Basic Size(mm): **135(L), 74(H)** Calibration Rod L0 (mm) : **100**			
Steel ruler		Material : **Aluminium Alloy** Lenght : **minimum300mm** Width : minimum **80mm**	27	Workshop	**ELTBW302**
VICES	Flat (parallel bench vice)	Materal:**carbon steel + cast iron** Size : **minimum 8"** Weight **: minimum 40kg** Clamp Force : **minimum 3000kg** Openness **: minimum 203mm**	5	Workshop	**ELTEM302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302**
	Pipe Vice	• Cast frame and base with mounting holes. • Hinged design for easy insertion of pipe into vice. • Suitable for electrical conduits and air installations. • Capacity: **Ø10-85mm.** Nett Weight: **minimum 5.1kg**	5	Workshop	
CRIMPING TOOL		Item Weight: **1.21 pounds (0.54 kg)** Material: **Carbon Steel, Thermoplastic Rubber** Handle Material: **Nylon** Item Dimensions LxWxH: **29 x 11.9 x 2.3 cm** Capacity: **0.25-2.5mm2**	27	Workshop	**ELTEM302** **ELTLS302** **ELTPS302** **ELTPV302** **ELTSD302**
Drawing tools set		**Contains:** 3 graphic compasses, 1 ruling pen, 1 dull locating pin, 1 extension bar safe pin, 2 pencil refills, 1 mechanical pencil, 2 triangular rulers, 1 piece 6-inch ruler, 1 piece 3.5-inch protractor, which are put in 1 shatterproof plastic box	27	class	**ELTED302**
Drawing board		Top Material Type: **Metal/wood** Mounting Type: **Tabletop**	27	class	**ELTED302**

Taps &die	DIE	Cutting Diameter: **minimum 3/8" (10mm)** Shank Diameter.: **minimum 1/4" (6mm)** Item Weight: **minimum 0.175767kG** Dimensions :**5.51 x 3.66 x 1.06 inches** Material**: High-quality heat-treated tungsten carbide** Shape: **Round**	27		
	TAP	Material: **High-Speed Steel** Item Weight: **minimum 20 g** Wire pitch (mm): **minimum 0.5** Drill length (mm): **minimum 5** Total length (mm): **minimum 54** Shank Diameter: **minimum 1/4"** Dimensions: **minimum 2.3 x 0.39 x 2.3 inches** Cutting Diameter: **minimum 10 Millimeters** Assembled Diameter: **minimum 10 Millimeters**	27		**ELTBW302**

*Note: the top partial row reads "Shape: **Rectangular** / Size: **minimum 20 inches by 26 inches**"*

1.3. Category 3: Security materials

Nº	Name and description	Specifications	Quantity	Type of room	Module code
1	Goggles	**Eyewear type**: The goggles should primarily provide protection against impact & optical radiation and splashes. **Weight**: Should weigh approx 51g **Widest lens**: Should have ellipsoidal lens that extends the	25	Workshop/Laboratory	CCMHE302 ELTBE301 ELTEM301 ELTIEC301 ELTPP301 ELTPV301 ELTIA301 GENBC301

		viewing range further, even peripherally. **Comfort**: Should have a soft PVC shroud that gently hugs the face and is indirect vented to allow cooling airflow and help prevent fogging.			
2	Mask	**Respirator Rating Number**: Class 95 **Capacity**: Removes 95% of all particles that are at least 0.3 microns in diameter.	25	Workshop/Laboratory	CCMHE302 ELTBE301 ELTEM301 ELTIEC301 ELTPP301 ELTPV301 ELTIA301 GENBC301
3	Ear muffler (Ear plug)	**Material**: Slow recovery polymer foam **Cord:** PVC material for cord	25	Workshop/Laboratory	CCMHE302 ELTBE301 ELTEM301 ELTIEC301 ELTPP301 ELTPV301 ELTIA301 GENBC301
4	Gloves	**Material:** Latex **Outer Material**: Latex **Length**: Medium	25	Workshop/Laboratory	CCMHE302 ELTBE301 ELTEM301 ELTIEC301 ELTPP301 ELTPV301 ELTIA301
5	Safety helmet	**Material**: High Density Polyethylene	25	Site work	ELTIA301 ELTPV301

		Size: Fully adjustable internal harness and nape strap for extra comfort **Shock absorption: vertically** penetration resistant against sharp and pointed objects **Insulation level**: flame resistance with an electrical insulation of 440 V			CCMHE302
6	Safety harness	**Design**: One dorsal attachment D-ring for fall arrest, Adjustable leg straps, Adjustable chest straps, Sit Strap, Made up of elastic webbing for more comfort & impact resistant. **Webbing**: Material in polyester, width of 44±1m and breaking strength of 23kN **STITCHING THREAD** made with High-tenacity polyester. **METAL COMPONENTS** : **Material** : Aluminium, **WEIGHT**:1006gm±10gm	25	Site work	ELTIA301 ELTPV301 CCMHE302
7	Overcoats for instructors	**Material**: 100% cotton, with long sleeve **Size**: Medium, Large and Extra	4	Workshop/Class/Lab/ Site	GENAM301 GENBC301 GENPHY301 ELTBE301 ELTDE301 ELTFE301 ELTEM301 ELTIEC301 ELTPP301

					ELTAE301
					ELTPV301
					CCMOL302
					CCMHE302
					CCMCL302
					CCMEN302
					CCMWC302
					CCMKN302
					CCMCB302
					CCMCO301
					CCMCI301
					CCMHE302
	Overall for student	**Type**: Heavy Duty **Material**: 100% cotton **Pockets:** Poly Zip and Velcro Fasten two side Pocket, One back Pocket two breast pocket **Size :** Small, Medium, Large	25	Workshop/Class/Lab/ Site	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301 ELTBE301 ELTDE301 CCMHE302
8	Safety shoes	**Materials:** Upper made of pure leather of thickness 1.6-1.8mm **Toe protection:** The shoes are marked steel toe cap to withstand minimum impact energy of 200 joules. **Outer sole:** made of poly-urethane, directly moulded, resistant to oil and acid with anti-skid design. Foam padded cushion for ankle protection	25	Workshop/Lab/ Site	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301 ELTBE301 ELTDE301 CCMHE302

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/lab	GENAM301 GENBC301 GENPHY301 ELTBE301 ELTDE301 ELTFE301 ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301 CCMHE302
11	Dry chemical extinguishers for class ABC	**Design:** Non corrosive pull pin; Completely rechargeable; Full hand grip for ease of operation; **Environment condition**: Waterproof stainless steel gauge; **Valve**: Steel valve, Quick release hose; **Cylinder material**: Steel cylinder complete with cylinder skirt ,Steel 2 1/2" cylinder; Cylinder with high corrosion and impact resistant finish (red epoxy); **Brackets:** Comes complete with wall bracket; **Gross weight**: Minimum 5kg	2	Workshop/lab/class/site	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301 ELTBE301 CCMHE302
12	CO_2 Extinguishers	Agent: **99% pure CO2 gas** Cylinder size: **D152*H750mm**	2	Workshop/lab/class/site	GENBC301 CCMHE302

		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: **110c**m Siphon tube:**M10*1*680mm** Bracket: **Red round hook** Cylinder painting: **7325 Red** painting Weight: Minimum 5**kg**			
13	Fire blanket	**Item Weight** :0.98883137kg **Material**: Fiberglass **Working Temperature**: Up to 1022°F (550°C) **Product Size** : 1m x 1m, 1.2m x 1.2m, 1.2m x 1.8m & 1.8m x 1.8m	4	Workshop/lab/class/site	
14	Aerosol Fire extinguisher	**Dimensions**: 268*225mm **Total weight**: minimum 4.6kg **Volume coverage**: up to 150m^3 **Discharge time** :25sec **Activation, current**: Manual screw-in starter with pin or cord **Operation conditions**:-40^{0}c to 75^{0}C			

1.4. Category 4: Consumables and raw materials

Name and description	Specifications	Quantity	Type of room	Module code
one gang switch	**Type**: 1 gang 1 Way switch, 10A, 250V, **Material**: Thermoplastic with glossy finish, **Accessories**: Back box with 2 screws M3.5	30 (surface mounted + Recessed)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
	Type: 1 gang 2 Way switch, 10A, 250V **Material**: Thermoplastic with glossy finish, **Accessories**: Back box with 2 screws M3.5	60 (surface mounted + Recessed)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Two gang switch	**Type:** 2 gang 1 Way switch, 10A, 250V, **Material**: Thermoplastic with glossy finish, **Accessories**: Back box with 2 screws M3.5	30 surface mounted + Recessed	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
	Type: 2 gang 2 Way switch, 10A, 250V, **Material**: Thermoplastic with glossy finish, **Accessories**: Back box with 2 screws M3.5	30 (surface mounted + Recessed)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Push button N.O/NC	**Operating voltage:** 220-250V /10A	30 (surface mounted + Recessed)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301

	Operation sequence: 500,000 operations min. (250 VAC, 3 A, with an inductive load having power factor cos θ = 0.4)			ELTAE301 ELTPV301 ELTIA301
Intermediate switch	**Type:** 10A, 250V, **Material**: Thermoplastic with glossy finish, **Accessories**: Back box with 2 screws M3.5	30 (surface mounted + Recessed)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Pull-switch	**Rated current**: 10A, 250V, large locker, **Material**: Thermoplastic with glossy finish, **Accessories**: Back box with 2 screws M3.5	30 (surface mounted + Recessed)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Timer switch	**Operating condition:** 220-250V, 50Hz, 10A, DIN Rail type **Type of Contact**: Changeover contact from NO to Close or NC to Open **No. of Programming**: 8 NO/8NC **Time Accuracy**: <2 sec/day **Power Consumption** : <4 VA	30 (surface mounted + Recessed)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Twilight switch	**Output**: 1x NO, 12 A. **Supply voltage (frequency):** AC 230 V (50/60 Hz) **Sensor**: built-in. **Adjustable light intensity**: 1 - 100 000 lx (in 3 ranges)	30 (surface mounted + Recessed)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Emergency light	**Lamp type**: Multiple LEDs, High Lumens output, 10W (minimum), LED shall be EDISON/Trulite/Everlite **Battery**: Ni-CD/Ni-MH Rechargeable	30 (surface mounted + Recessed)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301

	Battery Duration: 120 Minute Back-up; ±10% **Charging Type**: Constant current charger **Recharging cycle**: 16 - 24 Hours recharging period **Mounting**: Surface; On wall/ Ceiling Through 4 Nos. of Holes **Indication**: Red LED "On" for charging **Input voltage** : ~230V, 50Hz AC			ELTPV301 ELTIA301
Sensor switch	**Type**: Passive infrared (PIR) motion sensor switch **Wiring mode:** Can be wired as a Single-Pole or 3-Way device **Load:** Works will all popular load types: Incandescent, Electronic Low-Voltage, Fluorescent, CFL and LED **Status indicator**: Green LED indicates load status, provides locator light in dark and blinks to indicate motion detection **Operating voltage**: 240V/AC, 50Hz, 10A **Coverage**: 50 m2	30	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
	Type: 180° Passive Infrared Occupancy Sensor Switch **Load:** Works will all popular load types: Incandescent, Electronic Low-Voltage, Fluorescent, CFL and LED **Status indicator:** Green LED indicates load status, provides locator light in dark and blinks to indicate occupancy detection **Operating voltage**: **240V/AC, 50Hz, 10A** **Coverage**: **50 m^2**	30	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301

Wires single core	**Size**: 1.5mm^2 stranded wire **Type of insulator:** PVC-Insulated single core copper wire, with voltage capacity of 1000V	10 rolls (RED), 10 rolls (BLACK), 10 rolls (GREEN-YELLOW)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
	Size: 2.5mm^2 stranded wire **Type of insulator:** PVC-Insulated single core copper wire, with voltage capacity of 1000V	10 rolls (RED), 10 rolls (BLACK), 10 rolls (GREEN-YELLOW)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Multi core cables	**Type**: 3 core x 1.5mm^2 stranded **Type of insulator:** PVC-Insulated single core copper wire, with voltage capacity of 1000V	5 Rolls	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
	Type: 3 core x 2.5mm^2 stranded **Type of insulator:** PVC-Insulated single core copper wire, with voltage capacity of 1000V	5 Rolls	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
	Type: 4 core x 4mm^2 **Type of insulator:** PVC-Insulated single core copper wire, with voltage capacity of 1000V	1Roll	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301

Electrical bell	**Features**: 50 ON-OFF Steps Per Day, Indications: Auto Manual, Holiday, Relay Status, Day of week, Programming Mode **Supply Voltage:** 230 V AC **Mounting Type:** DIN Rail Mount	30	Workshop	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Lamp holders	**Type:** Plastic Bulb Holder, **Dimensions**: 100 x 170 x 220 mm **Voltage**: 220 V **Base Type**: B15, B22	30	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Socket outlet + ground electrode	**Type:** Single pole switched single power socket outlet 16A, 250V, **Function**: multi standard plug; **Material**: Thermoplastic with glossy finish **Accessories:** back box and 2 screws of M3.5	30 (surface mounted + Recessed)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
	Type: Double pole switched Twin socket outlet 16A, 250V, **Function**: multi standard plug; **Material**: Thermoplastic with glossy finish **Accessories:** back box and 2 screws of M3.5	30 (surface mounted + Recessed)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Connectors	**Type:** Insulated connectors 1.5mm^2, 2.5mm^2, 4mm^2	20 packets per each type	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301

Junction box	**Type**: PVC box complete with cover and screws,100mm x100mm, 3 way, light duty	60 pcs	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
	Type: PCV type complete with covers and screws, round box (1 way, 2 ways, 3ways, 4 ways)	20 pcs per each type	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
DB Enclosure	**Material:** Plastic type, **Size:** 12 ways complete with built in DIN rail, ground and earth connectors	30 pcs	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Circuit breakers	**Type**: MCB, **Tripping curve:** C, **Rating current**: 10A, **Fault current interrupting capacity:** ranging between 6-10kA	30 pcs(1P +2P)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
	Type: MCB, **Tripping curve:** C, **Rating current**: 16A, **Fault current interrupting capacity:** ranging between 6-10kA	30 pcs(1P +2P)	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
	Type: RCD, **Tripping curve:** C,	30	Workshop/lab	ELTEM301 ELTIEC301

	Rating current: 16A, **Sensibility**: 30mA **Fault current interrupting capacity:** ranging between 6-10kA			ELTPP301 ELTAE301 ELTPV301 ELTIA301
Cable clips	**Material:** Plastic type, complete with screws **Size**: 8,10,12,14mm	5 boxes	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Bulb lamps	**Type:** CFL, **Operating voltage:** 220V, 50Hz, **Power:** 10W	30 pcs	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Fluorescent lamps	**Type:** Fluorescent tube with electromagnetic blast and power factor correction up to cos =0.8, 220V, 50Hz, 20W	30 pcs	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Screws	**Head**: Countersunk **Size**: 30mm **Material to be drilled**: wood	1000 pcs	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Screws	**Head:** Countersunk **Size**: 50mm **Material to be drilled**: Bricks wall 50mm	1000 pcs	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301

				ELTAE301 ELTPV301 ELTIA301
Wall Plug	**Design:** Wall Plugs with Two Wings **Material**: PVC Usage: **Drywall, Brick, Concrete** Size : **6, 8, 10mm**	200 Pcs	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
PVC pipes	**Size**: 25mm of diameter and **Length:** 3m of length, **Usage:** light duty	200 pcs	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
PVC elbows	**Size:** 25mm of diameter, **Bend angle**: 45^0 and 90^0 **Usage:** light duty	200 pcs	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
PVC joints coupling	**Type:** PVC conduit sockets, **Size:** 25mm of diameter **Usage:** light duty	200pcs	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Insulation tapes	**Backing (Material Type**: Polyvinyl chloride (PVC) tape	10 packets	Workshop/lab	ELTEM301 ELTIEC301

	Width x Lengt: 9mm x 33m, 12.7mm x 33m, 19mm x 33m, 25mm x 33m, 38mm x 33m, 50mm x 33m **Dielectric Strength**: Standard Condition 5.6kV/mm **Breaking Strength at 22°C (72°F):** 30N/10mm			ELTPP301 ELTAE301 ELTPV301 ELTIA301
Plug	**Design:** The plug must be three wire, earthed, **Operating voltage and current**: 10 A, 250 V, 50Hz **Maximum output power**: 2200 W	50 pcs	Workshop/lab	ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301

2. Training facilities

2.1. Furniture and office materials

Name and description	Specifications	Quantity	Type of room	Module code
Office Cupboard	1.Two-door steel locker 2. Size:**H1850 x W900 x D450mm** 3. Thickness: **1.0mm** 4. Volume:**0.178cbm** 5. Fitting:**4shelves** 6. Weight:**40.5kgs**	5	Store/ Workshop	ELTBE301 ELTDE301 ELTFE301 ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301

Glass Cupboard/Bookcase Cabinet Unit	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; 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	1	Trainer's Office	GENAM301 GENBC301 GENPHY301 ELTBE301 ELTDE301 ELTFE301 ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Shelves for equipment storage	1.Size:**3 x0.5 x 2m (L x W x H)** 2.5 Layer full steel 3.Cold – Rolled steel plate	5	Workshop	ELTBE301 ELTDE301 ELTFE301 ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301
Medium back officer Chairs	.Passive ergonomic seating with built in lumber support .Upright-locking position. .Pneumatic seat	6	Trainer's Office	GENAM301 GENBC301 GENPHY301 ELTBE301

	.Height adjustment .Adjustable tilt tension control colour: Black **Dimensions:** .Back: **24"(H) x 20"(W)** .Seat: **20"(D) x 20.5"(W)** .Seat Height: **18"-21"**			ELTDE301 ELTFE301 ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Office Tables with drawers	1. With hanging pedestal 2.Melamine faced chipboard 3.Desk top and side panel: 25mm 4.Modesty panel: 18mm 5.Color: beech, mahogany 6.Size: **1,500 x 800 x 750mm** 7.Three fully locking drawers on the right hand side	6	Trainer's Office	GENAM301 GENBC301 GENPHY301 ELTBE301 ELTDE301 ELTFE301 ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
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	GENAM301 GENBC301 GENPHY301 ELTBE301 ELTDE301 ELTFE301 ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301

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	GENAM301 GENBC301 GENPHY301 ELTBE301 ELTDE301 ELTFE301 ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
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, without contaminated** 4. Metal: **Epoxy Powder coated, antirust, damp proof, strong**	15	ICT LAB	ELTDE301 CCMCL302
Student Chairs	1. Size: **2400x1200mm** 2. Economy non-magnetic chalkboard on 2 sides 3. Aluminium framed, free-standing 4.whiteboard on one side and chalkboard on the other.	52	Classroom and ICT LAB	GENAM301 GENBC301 GENPHY301 ELTBE301 ELTDE301 ELTFE301 ELTEM301 ELTIEC301 ELTPP301 ELTAE301

				ELTPV301 ELTIA301 CCMCL302
Portable, Reversible Dry Erase Boards & Chalkboards	1. Size: **1800x1200mm** 2. Economy non-magnetic chalkboard on 2 sides 3. Aluminium framed, free-standing 4.whiteboard on one side and chalkboard on the other.	3	Classroom, LAB and Workshop	GENAM301 GENBC301 GENPHY301 ELTBE301 ELTDE301 ELTFE301 ELTEM301 ELTIEC301 ELTPP301 ELTAE301 ELTPV301 ELTIA301
Papers	A$_4$	5 carton of 5 reams each	Trainer's Office	ELTEM302 ELTLS302 ELTPS302 ELTPV302 ELTSD302 ELTBW302 ELTED302 ELTFE302 GENAM301 GENPHY301 CCMBC302 CCMCL302 CCMEN302 CCMHE302 CCMIA302 CCMKN302
Pens	Blue Bic	1 Packet	Trainer's Office	
	Red Bic	1 Packet	Trainer's Office	
Stapling Machine	Rapid K2, 105 mm Length	2 Pcs	Trainer's Office	
Staplers	24/6	5 Packets	Trainer's Office	
Paper clips	25mm, small Size,	1Box of 10 Packets	Trainer's Office	
	33mm, medium Size,	1Box of 10 Packets	Trainer's Office	
	50mm, Big sizes	1 Box of 10 Packets	Trainer's Office	
Punching machines	8Cm, Punching Capacity: 36mm With calibrated Guide	1 Pc	Trainer's Office	
Stapler removers	Colour: black Dimensions: 4.8X4X1.4 inches	2 Pcs	Trainer's Office	
Pencils	Dolphin Super B Writer	1 Packet of 12 Pcs	Trainer's Office	
Notebooks	A$_4$	1 Carton of 60 Pcs each	Trainer's Office	

Plastic files	A$_4$	2 Packets of 12 Pcs	Trainer's Office	CCMOL302
Register books	A$_4$	6 Pcs	Trainer's Office	
Office trays	Tray site of 3 or 4 Size: 385X285X65mm	6 Pcs	Trainer's Office	
Post it	3" x 5"/7.6 x 12.7 Cm , 12 Pads	1 Box	Trainer's Office	
Non-permanent 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	
Chalks (Cartons of 36 Packets for each carton)	Cartons of white colours	1Carton of white colours	Classroom, LAB and Workshop	
	Cartons of Colours	1 Carton of Colours	Classroom, LAB and Workshop	
Square Graph (drafting) paper (Book of 25 papers each)	A$_3$	5 Books	Drawing room	
	A4	5 Books	Drawing room	
Internship logbook for trainees	A4	25 logbooks	Industry	CCMIA302 I
Internship logbook for the Industry supervisor	A4	25 logbooks	industry	CCMIA302 I
Internship logbook for school supervisor	A4	25 logbooks	Industry	CCMIA302 I

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.	2	ICT lab and Classroom	ELTEM302 ELTLS302

	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). Native Aspect ratio: 1.25:1; Video Compatibility: Component, S-video, composite HDTV: 720p, 1080i, 1080p/60, 1080p/24, 576i, 576p Lamp Life : 5000 hours, 6000 eco-mode. Screen size : 60- 100 inches Portable Indoor and Outdoor projector.			ELTPS302 ELTPV302 ELTSD302 ELTBW302 ELTED302 ELTFE302 GENAM301 GENPHY301 CCMBC302 CCMCL302 CCMEN302 CCMHE302 CCMIA302 CCMKN302 CCMOL302
Computers	✓ **Desktop Intel Core i3** Screen size: No monitor, Memory size (RAM): 4GB Memory Storage : 500GB ✓ **Laptop core i3** 15.6 inch with memory size (RAM): 4GB Storage Memory :500GB, Operating System Windows 10	30	ICT LAB and Trainer's office	CCMCL302
Each module with its specific backup storage	DVD CDs USB discs	Different	ICT LAB	ELTEM302 ELTLS302 ELTPS302 ELTPV302 ELTSD302 ELTBW302 ELTED302

				ELTFE302 GENAM301 GENPHY301 CCMBC302 CCMCL302 CCMEN302 CCMHE302 CCMIA302 CCMKN302 CCMOL302
CAD Software	Electrical Software for Creating wire Diagrams	30 Users	ICT LAB	ELTEM302 ELTLS302 ELTPS302 ELTPV302 ELTSD302
Printer	Processor speed: 1.0 GHz Recommended monthly print volume : Up to 1,500 pages Print memory (standard) : 512 MB standard Maximum copy resolution : Up to 600 x 600 dpi Scan resolution (optical) : 600 x 600 dpi Capacity: 50 sheets Size: 4.1 x 5.8 in. to 8.5 x 14 in. (104 x 148 mm to 216 x 356 mm) Minimum dimensions (WxDxH) : 16.2 x 15.5 x 13.6 in. (411.2 x 394.1 x 344.4 mm)	1	Trainer's office	ELTEM302 ELTLS302 ELTPS302 ELTPV302 ELTSD302 ELTBW302 ELTED302 ELTFE302 GENAM301 GENPHY301 CCMBC302 CCMCL302 CCMEN302 CCMHE302 CCMIA302

				CCMKN302 CCMOL302
Weight : 42.7 lb (19.4 kg)				

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 designed for blackboards. Features handles for ease of use. Includes a 45® triangle (23" base, 16" sides), 60° triangles (2" base), 180° protractors, meter ruler (39"/100 cm), and a clear acrylic compass (18" L with rubber suction cup).	2 set	classroom	ELTEM302 ELTLS302 ELTPS302 ELTPV302 ELTSD302 GENAM301 ELTED302
Textbook lessons	See the book reference on the last page of this documents	25 books per module	Library	All modules
Posters	A2 (594mm x 420mm), A3 (420mm x 297mm) and A4 (297mm x 210mm)	50 pcs for each size	Classroom, laboratory or workshop	All modules
Solar panel simulator kit With accessories	Power: 80watts Peak Output: 5.0A @ 17.2V Approx. watt-hours/day*: 560 Approx. amp-hours/day*: 35 Dimensions: 1196x534x35mm Weight: 7.9kg * Based on 7 hours of average daily peak sunlight hours	5	workshop	ELTPV301

2.4. Infrastructures

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

Type of premises	Number of rooms	Length (meters)	Width (meters)	Total surface (m²)
Classroom	1	7	6	42
Workshop/site	1	10	8	80
ICT lab	1	10	8	80
Electrical laboratory	1	10	8	80
Drawing room	1	10	8	80
Storage area for consumables	1	4	6	24
Storage area for tools	1	9	7	63
Trainers' room	1	7	6	42
Washroom	1	2	4	8
Emergency washroom	1	2	4	8
Chemistry Laboratory	1	10	8	80
Physics Laboratory	1	10	8	80

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.

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