Republic of Rwanda
Ministry of Education

RTB | RWANDA TVET BOARD

MUSIC INSTRUMENT MAINTENANCE AND CABLE REPAIR

MPAIM302

Maintain music instrument and repair

Competence

RQF Level: 3

Learning Hours: 60

Credits: 6

Sector: Art and Craft

Trade: Music and performing arts

Module Type: Specific

Curriculum: ARCMPA3002- TVET Certificate 3 in Music and Performing Arts

Issue Date: February 2023

<table>
<tr><td>Purpose statement</td><td colspan="5">This module describes the skills and knowledge required to Diagnose instrument defects, prepare tools, Solder cables, Perform repair and Store instruments properly.</td></tr>
<tr><td rowspan="6">Delivery modality</td><td colspan="2">Training delivery</td><td>100%</td><td colspan="2">Assessment</td><td>Total 100%</td></tr>
<tr><td colspan="2">Theoretical content</td><td>30%</td><td rowspan="4">Formative assessment</td><td>30%</td><td rowspan="4">50%</td></tr>
<tr><td colspan="2">Practical work:</td><td rowspan="3">70%</td><td rowspan="3">70%</td></tr>
<tr><td>• Group project and presentation</td><td>20%</td></tr>
<tr><td>• Individual project /Work</td><td>50%</td></tr>
<tr><td colspan="3"></td><td colspan="2">Summative Assessment</td><td>50%</td></tr>
</table>

Elements of Competency and Performance Criteria

Elements of competency	Performance criteria
1. Diagnose instrument defects	1. The instrument is carefully inspected to find the defects
	2. Parts are carefully disassembled in order to reach the defect source
	3. Repair costing techniques are effectively applied
	4. Necessary repairing tools are properly collected,
2. Prepare tools	1. Cable type are properly identified
	1. Working area is properly prepared
	1. Tools is needed is properly is selected
3. Solder cables	1. Unwanted parts should be removed appropriately.
	1. Soldering techniques should be applied properly.
	1. Cable should be tested appropriately.
4. Perform repair	1. Damaged parts are appropriately replaced or repaired
	2. Instrument performance is adequately tested
	3. Repaired instrument is reassembled appropriately

5. Store instrument	1. Repaired instrument is neatly cleaned according to the manufacturer's instructions
	2. Repaired instrument is stored appropriately as per storage standards.
	3. The report is properly prepared.

Course content

Learning outcomes	**At the end of the module the learner will be able to:** 1. Diagnose instrument defects 2. Prepare tools 3. Solder cables 4. Perform repair 5. Store instrument
Learning outcome 1: Diagnose instrument defects	**Learning hours: 10**
Indicative content	
● Inspect instrument to find defects. ✓ Instruments types: ● String instruments ● Wind instruments ● Percussion instruments ● Keyboard ✓ Music instrument defects ✓ Diagnosis techniques ● Collect tools ✓ Different instrument parts and their specific functions. ✓ Parts removal process ● Precision ● Tools techniques ● Disassemble instrument parts ✓ Different instrument parts and their specific functions. ✓ Parts removal process ● Precision ● Tools techniques	
Resources required for the learning outcome	
Equipment	● Personal Protective Equipment ● Electro-mechanic toolkit ● Personal Protective Equipment ● Working table ● Reference books ● Fan/ventilation

Materials	• Internet
Tools	• Music instruments • Electronic tuners • Tuning forks • Video
Facilitation techniques	• Brainstorming on instrument types and common defects • Practical exercises on checking tonal defects for different instruments • Group discussion on different types of instruments parts • Demonstration on parts removal process • Practical exercises on parts removal process • Group discussion on different types of instruments parts • Demonstration on parts removal process • Practical exercises on parts removal process
Formative assessment methods	• Performance evidence

Learning outcome 2: Prepare tools and materials	**Learning hours: 10**
Indicative content	

- Identify cable types.
  - ✓ Types of cables and their functions:
    - XLR ,TRS ,RCA ,midi ,speak on, snake cables
    - Jack to jack(quarter-inch cables)
    - Stereo cables
    - Mono cables
    - Cable adaptors
    - Digital coaxial audio cables
    - Electric cables
    - 3.5mm and 2.5mm audio cables
    - 3.5mm RCA cables
    - Optical audio cables
    - Speaker wires
- Select tools

- ✓ Electro mechanical toolkits for repairing cables
- ✓ Soldering iron and its different size heads/tips
- ✓ Magnifier

- Identify soldering materials
  - ✓ Soldering materials
    - Cleaning alcohol
    - Lead
    - Masking tape
    - Cotton tip

Resources required for the learning outcome	
Equipment	• Cable adaptors • Electro mechanical toolkits • Magnifier • Soldering iron • Soldering iron heads • Lead • Masking tape • Cotton tip
Materials	• Stereo cables • Mono cables • Digital coaxial audio cables • Electric cables • 3.5mm and 2.5mm audio cables • 3.5mm RCA cables • Optical audio cables • Speaker wires • Internet • Cleaning alcohol
Tools	• XLR ,TRS ,RCA ,midi ,speak on, snake cables • Jack to jack(quarter-inch cables)
Facilitation techniques	• Brainstorming on cable types • Display of different cables • Practical exercises on identification of cables

	• Brainstorming on electro -mechanic tool • Group discussion on tools used in repairing cables • Practical exercises on selection and handling electro-mechanic tools • Brainstorming on soldering materials • Group discussion on soldering materials • Display of soldering materials
Formative assessment methods	• Performance evidence

Learning outcome 3: Solder cables	**Learning hours: 10**
Indicative content	
• Removing unwanted parts ✓ Cleaning techniques of damaged area/surface ✓ Removing techniques of damaged parts • Melting/heating • Cutting ✓ Types of cables defects • Application soldering techniques ✓ Soldering techniques • Principles • Rules regarding soldering iron tip voltage • Rules regarding application of soft solders (lead/tin) • Testing cables ✓ Testing cables process • Usage of testers • Performance	
Resources required for the indicative content	
Equipment	• Complete electro-mechanic • Personal Protective equipment • Lead free/tin • Soldering iron

Materials	• Cleaning alcohol • Damaged cables • Repaired cables • Masking tape
Tools	• Cotton tip • Electronic testers • Current power
Facilitation techniques	• Demonstration on cleaning and removing techniques of damaged parts • Practical exercises on cleaning and removing techniques of damaged parts • Practical exercises on diagnosis of defects • Demonstration on soldering techniques • Practical exercises on soldering techniques • Demonstration on testing cables • Practical exercises on testing cables
Formative assessment methods	• Performance evidence

Learning outcome 4: Perform parts replacement	**Learning hours: 20**
Indicative content	
• Replace damaged parts ✓ Check-up of accessories & spare parts as per standards ✓ Parts assembling • Re-assemble instrument parts ✓ Check-up of accessories & spare parts as per standards ✓ Parts assembling • Test instrument performance ✓ Calibration techniques	
Resources required for the indicative content	
Equipment	• Lamps • Working table

	• Dust bins • Music instruments • Electronic tuners
Materials	•
Tools	• Accessories & spare parts • Complete electro-mechanic tool kit • Tuning forks
Facilitation techniques	• Brainstorming on different music customers • Brainstorming on recyclable/reusable and non-usable parts, storage and waste management • Demonstration on replacement of instrument parts • Practical exercises on replacing parts • Brainstorming on recyclable/reusable and non-usable parts, storage and waste management • Demonstration on replacement of instrument parts • Practical exercises on replacing parts • Practical exercises on adjustment and tuning of instruments
Formative assessment methods	• Performance evidence

Learning outcome 5: Store music instruments	**Learning hours: 10**
Indicative content	
• Clean instrument ✓ Cleaning techniques ✓ Cleaning materials ✓ Personal Health guidelines while cleaning ✓ Safety precautions of the instrument while cleaning • Store instrument as per standards ✓ Storage conditions • Temperature ✓ Physical characteristics of the instruments • Shapes • Fragility ✓ Importance of and types of instruments covers/cases ✓ Instrument handling principles and techniques:	

- Transportation
- Handle music instruments
  - ✓ Storage conditions
    - Temperature
  - ✓ Physical characteristics of the instruments
    - Shapes
    - Fragility
  - ✓ Importance of and types of instruments covers/cases
  - ✓ Instrument handling principles and techniques:
    - Transportation

Resources required for the indicative content	
Equipment	• Protective eye glasses • Measurement instruments
Materials	• Alcohol • Anti-corrosive spray
Tools	• Brushes • Water • Antiseptics • Tissues • Soft cloth • Polishing spray • Gloves • Boots • Ventilators • Thermometers • Humidifiers • Covers
Facilitation techniques	• Brainstorming on cleaning techniques and materials. • Practical exercises on cleaning different instruments • Presentation on specific hazards of different instruments • Presentation on storage conditions for different instruments • Group discussion on fragile instruments, covers and mobility (transportation) • Practical exercises on handling techniques • Presentation on storage conditions for different instruments • Group discussion on fragile instruments, covers and mobility (transportation)

	• Practical exercises on handling techniques
Formative assessment methods	• Written evidence • performance evidence

References:

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2. Fink, D. G. (2019). Electronic troubleshooting techniques. Elsevier.
3. Kramer, D. J. (2018). Basic electronics: Troubleshooting and repair. Cengage Learning.
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5. Jones, D. (2019). Soldering for electronics: A practical guide. Maker Media.
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