



Republic of Rwanda
Ministry of Education



RTB | RWANDA
TVET BOARD

ETESS302

SOUND SYSTEM INSTALLATION

INSTALL SOUND SYSTEM

Competence

RQF Level: 3

Learning Hours



40

Credits: 4

Sector: Technical Services

Trade: Electronics and Telecommunication

Module Type: Specific

Curriculum: TSVETE3001- TVET Level 3 in Electronics and Telecommunication

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Purpose statement	This module describes the knowledge and practical skills required to install sound system. At the end of this module, learners will be able to conduct the site survey, determine the required resources, perform installation and test the installed sound system.				
Learning to be assumed in place	Physics, Basics of electrical and electronics, SHE				
Delivery modality	Training delivery	100%	Assessment	Total 100%	
	Theoretical content	30%	Formative assessment	30%	
	Practical work:	70%		70%	50%
	<ul style="list-style-type: none"> Group project and presentation 				
	<ul style="list-style-type: none"> Individual project /Work 	50%			
			Summative Assessment	50%	

Elements of Competency and Performance Criteria

Elements of competency	Performance criteria
1. Conduct site survey	1.1. The site is correctly Inspected according to the work to be done
	1.2. Tools and materials are efficiently determined according to the work to be done
	1.3. Equipment list is appropriately elaborated according to the work to be done
	1.4. Electrical power source is precisely Identified considering the equipment and the site to be installed
	1.5. Security concerns of equipment and materials is carefully assured as per working environment
2. Prepare Equipment	2.1. Number of speakers are adequately selected considering the size of the site
	2.2. Number and length of audio cables are sufficiently selected and properly prepared considering the number of speakers and their respective positions
	2.3. Microphones, Audio amplifiers and Audio mixers are property Selected considering the work to be done
3. Perform sound system installation	3.1. The right positions of audio mixer and amplifiers are suitably chosen according to the site size and the purpose of the event
	3.2. Speakers are carefully placed/mounted in their proper positions based on the coverage area.
	3.3. Sound equipment are carefully interconnected respecting installation procedures
	3.4. Sound system is carefully tested with respect to the testing techniques
	3.5. Sound quality is accurately adjusted according to the sound standards

Course content

Learning outcomes	At the end of the module the learner will be able to: <ol style="list-style-type: none"> 1. Conduct site survey 2. Select and Prepare Equipment 3. Install and test the sound system
Learning outcome 1: Conduct site survey	Learning hours: 5

Indicative content

- **Inspection of the site based on:**
 - ✓ Nature of the site (Indoor or outdoor)
 - ✓ Network coverage availability
 - ✓ Estimation of total electrical power of the whole system
 - ✓ Power supply system (Single phase or three phases)
 - ✓ Location of the power supply
- **Determination of tools, equipment and materials**
 - ✓ Types of tools
 - ✓ Types of equipment
 - ✓ Types of materials
- **Application of safety precautions**
 - ✓ Environmental conditions
 - ✓ Physical security of Equipment and materials
 - ✓ Security of cables

Resources required for the learning outcome

Equipment	Digital Multimeter
Materials	Recording book
Tools	Measuring tape, Helmet, Face mask, Torch

Facilitation techniques and learning activities	<ul style="list-style-type: none"> • Lectures • Individual and group work • Practical exercise • Trainer guided • Group discussion
Formative assessment methods	<ul style="list-style-type: none"> • Written assessment • Oral presentation • Performance assessment

Learning outcome 2: Select and Prepare Equipment	Learning hours: 10
Indicative content	
<ul style="list-style-type: none"> • Description of microphone <ul style="list-style-type: none"> ✓ Types and applications of microphones ✓ Classification of microphones based on technological aspects ✓ Classification of microphones based on usage ✓ Test microphones • Description of speakers <ul style="list-style-type: none"> ✓ Types and applications of speakers ✓ Differentiate active and passive speakers ✓ Identification of speakers based on power and impedance ✓ Test speaker • Description audio cables <ul style="list-style-type: none"> ✓ Types and applications of audio cable ✓ Classification of audio cables based on their uses ✓ Identification of audio cable connector types and their uses • Description of audio mixer <ul style="list-style-type: none"> ✓ Types and applications of Audio mixers ✓ Classification of audio mixers based on technology ✓ Test audio mixers • Description of audio amplifiers 	

- ✓ Types and applications of audio amplifiers
- ✓ Identification of audio mixers based on their power and output impedance.
- ✓ Test audio amplifiers

Resources required for the indicative content

Equipment	Computer, wireless microphone, Wired microphone, Audio Connectors, Audio Mixers, Audio Amplifier, Direct Injection(DI) boxes, Sound card, Sound Limiter, Outdoor and Indoor Cable Tray / Protector, Audio splitter, Monitor speakers, Digital Audio Workstation (DAW), Audio Cables, Power extension cables, Audio cable adapter
Materials	Soldering tin, Insulation tape, CD/DVDs, Microphone Batteries
Tools	Wire strippers, Screwdrivers, Pliers, Cable cutters, Spanners, Digital Multimeter, Safety knife, Hex keys, Torch, Soldering iron, Audio editing Software, Headphone, Helmet, Grooves, Face mask , Eyes protector, Audio Cable test, Speaker stand tripod, Microphone stand
Facilitation techniques and learning activities	<ul style="list-style-type: none"> ● Individual and group work ● Practical exercise ● Trainer guided ● Group discussion
Formative assessment methods	<ul style="list-style-type: none"> ● Written assessment ● Oral presentation ● Performance assessments

Indicative content

- **Determination of positions for sound system equipment and installation**
 - ✓ Ways of selecting control areas to place audio mixer and amplifiers
 - ✓ Ways of selecting areas to place Speakers
 - ✓ Ways of selecting area for Wireless microphone receivers
 - ✓ Selection of audio cables routes

- **Interconnection sound system**
 - ✓ Identification of different types of audio ports and connectors
 - ✓ Identification of inputs and outputs ports of audio mixers and amplifier
 - ✓ Connection of Microphones to the audio mixer
 - ✓ Connection of audio mixer to audio amplifiers
 - ✓ Connection of audio amplifiers to speakers

- **Adjustment of sound quality**
 - ✓ Preliminary operations of audio mixer
 - ✓ Determine and apply steps to set up the mixer

Resources required for the indicative content

Equipment	Computer, wireless microphone, Wired microphone, Audio Connectors, Audio Mixers, Audio Amplifier, Direct Injection(DI) boxes, Sound card, Sound Limiter, Outdoor and Indoor Cable Tray / Protector, Audio splitter, Monitor speakers, Digital Audio Workstation (DAW), Audio Cables, Power extension cables, Audio cable adapter
Materials	Soldering tin, Insulation tape, CD/DVDs, Microphone Batteries
Tools	Wire strippers, Screwdrivers, Pliers, Cable cutters, Spanners, Digital Multimeter, Safety knife, Hex keys, Torch, Soldering iron, Audio editing Software, Headphone,

	Helmet, Grooves, Face mask, Eyes protector, Audio Cable test, Speaker stand tripod, Microphone stand
Facilitation techniques and learning activities	<ul style="list-style-type: none"> ● Lectures ● Individual and group work ● Practical exercise ● Trainer guided ● Group discussion
Formative assessment methods	<ul style="list-style-type: none"> ● Written assessment ● Oral presentation ● Performance assessments

Integrated/Summative assessment

Integrated situation

4STIN Sound System Ltd won a tender to install a sound system for the East African Party Concert that will take place at Remera near Amahoro stadium.

As a sound system installer from 4STIN Sound System Ltd, you are required to:

- A. Conduct the site survey for the surface area equivalent to 20000m².
- B. Select and prepare appropriate equipment to satisfy the event.
- C. Install the sound system to cover the area mentioned in A.

The required materials, tools and equipment are available

Resources

Tools	Screwdrivers, Pliers, Cable cutters, Spanners, Digital Multimeter, Safety knife, Hex keys, Torch, Audio editing Software, Headphone, Helmet, Grooves, Face mask, Eyes protector, Audio Cable test, Speaker stand tripod, Microphone stand
Equipment	Computer, wireless microphone, Wired microphone, Audio Connectors, Audio Mixers, Audio Amplifier, Direct Injection(DI) boxes, Sound card, Sound Limiter, Outdoor and Indoor Cable Tray / Protector, Audio splitter, Monitor speakers, Digital Audio Workstation (DAW), Audio Cables, Power extension cables, Audio cable adapter
Materials/consumables	Soldering tin, Insulation tape, CD/DVDs, Microphone Batteries

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
Learning outcome 1: Conduct site survey (15%)	1.1.The site is correctly Inspected according to the work to be done	The nature (indoor/outdoor) of the site is considered			2
	1.2.Tools, materials and equipment are efficiently determined according to	The list of materials, tools and equipment is			4

	the work to be done	properly determined			
	1.3.The electrical power source is precisely Identified considering the equipment and the site to be installed	An electrical power supply system (Single/three-phase) is considered			3
		Location of Power Sources is considered			2
	1.4.Security concerns of equipment and materials are carefully assured as per the working environment	Environmental requirements are considered			2
		Safety requirements are considered			2
Learning outcome 2: Select and Prepare Equipment (15%)	1.1. Number of speakers is adequately selected considering the size of the site	The required number of speakers is selected			4
	1.2.Number and length of audio cables are sufficiently selected and properly prepared considering the number of speakers and their respective positions	The required number of cables is selected			2
		Required cable lengths are carefully selected			2
	1.3.Microphones, Audio amplifiers and Audio mixers are properly Selected considering the work to be done	The required size of the audio mixer is properly selected			3
		Required size and number of amplifiers are selected.			3
		The required number of required microphones is selected			3
Learning outcome 3:	1.1. The right positions of the audio mixer and	Audio amplifiers are correctly			5

Install and test the sound system (70%)	amplifiers are suitably chosen according to the site size and the purpose of the event	positioned			
		The audio mixer is correctly positioned			5
	1.2. Speakers are carefully placed/mounted in their proper positions based on the coverage area	Speakers are suitably placed in their positions			9
	1.3. Sound equipment is carefully interconnected respecting installation procedures	Microphones correctly connected to the input of the audio mixer			10
		Audio amplifiers are correctly connected to the output of the mixer			10
		Speakers are correctly connected to the output of audio amplifiers			10
	1.4. Sound system is carefully tested using testing techniques	Equipment carefully powered			3
		The system with playback(music) is successfully tested			7
	1.5. Sound quality is accurately adjusted according to the sound standards	Microphone with playback(music) successfully tested			9
	Total marks				
Percentage Weightage					100%
Minimum Passing line % (Aggregate): 70%					

References:

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